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SAM. L. ROGERS, DIRECTOR

CENSUS OF ELECTRICAL INDUSTRIES: 1917

TELEPHONES



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CENSUS OF ELECTRICAL INDUSTRIES: 1917.

ELECTRIC RAILWAYS.

ELECTRIC LIGHT AND POWER STATIONS.

TELEGRAPHS AND MUNICIPAL ELECTRIC FIRE-ALARM AND POLICE-PATROL SIGNALING SYSTEMS.

TELEPHONES.

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TELEPHONES.

CHAPTER I.—INTRODUCTION.

General description of census of telephones.—The census of telephones is taken every fifth year. Thus far four such enumerations have been made covering the years 1902, 1907, 1912, and 1917. Statistics of telephones were also gathered in connection with the decennial censuses of 1880 and 1890. The development of the industry can thus be traced from its very beginning, though the statistics for the two earlier censuses are not fully comparable with those of recent censuses.

This report presents the detailed figures for 1917 and comparative statistics for the earlier years. Each census has covered the public telephone lines or systems operated during all or any part of the census year. Reports were not required, however, from certain private lines—e. g., those used exclusively by railroads for the dispatching and operating of trains; those connecting different branches or departments of manufacturing or mercantile establishments, hotels, mines, lumber camps, etc.; those operated by the Government, whether Federal, state, or municipal, exclusively for communication between different bureaus and offices, etc. The statistics for telephonic fire-alarm and police-patrol signaling systems are included in the report for these industries, and with that for telegraphs form parts of the census of electrical industries for 1917. Data regarding train dispatching by telephone and such statistics as were collected in regard to Government telephones are shown in the report on telegraphs.

The census of telephones is confined to continental United States. It does not, therefore, include Alaska, Hawaii, Porto Rico, the Philippine Islands, the Virgin Islands, or the Panama Canal Zone.

A distinctive feature of the telephone business in many parts of the country during the past two decades has been the construction of a large number of farmer or rural lines. Although these lines are practically always connected with an exchange, they frequently are not owned by the company operating the exchange. Usually each such line is jointly owned by the farmers who have their telephones connected with it. Experience has demonstrated that very little accurate information regarding these lines can be obtained, the only statistics published for them at the three preceding censuses being the number of such lines, the number of miles of wire which comprised them, and the number of telephones on them. Furthermore, it was found

equally difficult in 1902 and 1907 to obtain dependable information regarding the small telephone exchanges. Statistics obtained for these small systems in 1902 were so incomplete that, in 1907, all mutual or combined commercial and mutual telephone systems having an income of less than \$1,000 and all small systems owned by individuals or firms and apparently operating for revenue but having an income of less than \$500, were included with the independent farmer or rural lines.

The distinction between the systems having exchanges and the independent farmer or rural telephone lines, which had been unsatisfactorily maintained in 1902 and partially abandoned in 1907, was definitely discarded in 1912. Detailed statistics were required at the censuses of 1912 and 1917 only from companies having an annual gross income of \$5,000 or more. Any company, line, or system having an annual income of less than that amount is now required to make only a very brief report.

The telephone business of the United States is peculiar in that a single organization, the American Telephone & Telegraph Co. which together with its constituent organizations is commonly known as the Bell Telephone System, controls a very large proportion of the telephone equipment of the country. This company collected the reports from its 145 subsidiary companies and compiled them into a consolidated report for the use of the Bureau of the Census. This consolidated report furnished the totals for the United States, and separate figures for each state for the number of miles of wire, number of telephones, number of messages or talks, and number of public and private-branch exchanges.

Most of the telephone companies that had incomes of \$5,000 or more are well enough known so that their names and addresses can easily be ascertained. The smaller systems, however, and especially the farmer or rural lines, often have no definite names. It is rather difficult, in many cases, even to learn of the existence of such lines. In order to obtain as complete a list as possible of all telephone organizations for the census of 1917 every available source of information was utilized. The basis for the canvass was the list of systems which reported in 1912. Postmasters in all except the larger cities were requested to secure a list of the names of all telephone lines in their vicinity and to forward this to the Census Bureau. Lists of com-

panies and lines were also obtained from telephone associations and from directories. Reports of state bureaus that collect information regarding telephone companies were utilized whenever such existed. Lists were prepared from all these various sources and schedules were then mailed to each name on the list. One of the questions on the schedule mailed called for the names and addresses of farmer or rural lines or systems in the vicinity. The answers to this inquiry added many new names of rural telephone lines to the census list. Office representatives were then assigned to districts for the purpose of securing reports from all companies, systems, or lines named on the list which had not already made reports to the Bureau of the Census by mail. Each agent was held responsible for a thorough canvass of his district; he was instructed to make careful inquiry in each locality and to be constantly on the alert to discover any existing systems or lines not named on the list, and if any such were found, to secure reports for them. It is believed that exceedingly few, if any, companies, systems, or lines were overlooked.

Period covered.—The statistics for 1917 for all telephone companies are for the year ending December 31, or for the business year of each company most nearly conforming thereto. In practically every case, as a matter of fact, the figures are for the calendar year, since the Interstate Commerce Commission and the various state commissions require that the reports annually submitted shall relate to the calendar year. There were a few cases in which the reports did not represent a full year's operation, but covered that part of the year 1917 during which the company was in operation. In 1912 the reports for the companies having annual incomes of \$5,000 or more were for the year ending December 31, but those for systems or lines reporting annual incomes of less than \$5,000 were for the year ending December 1.

Statistics of the number of messages or talks, as well as those of income and expenses, are for the calendar year. The number of telephones for the census of 1917 was reported both for December 31, 1916, and for December 31, 1917; so that an average number for the year 1917 could be obtained for use in calculating "per telephone" figures of traffic and financial results. The miles of pole line, miles of wire, etc., as well as the figures on the balance sheet, relate to the last day of the business year covered by the report of each company.

Unit of enumeration.—The terms "company," "line," and "system," are used to designate the unit for which a separate census report was secured. They are frequently used as synonymous terms. They represent a statistical unit, the significance of which varies slightly to meet the requirements of the different methods of bookkeeping of the companies and the practice of the Bureau of the Census in the compila-

tion of the data. As a rule a distinct ownership marks the separation of the statistical units and all exchanges and lines operated under the same ownership are counted as one system. Where several lines are combined under one ownership or several properties have been brought under one management by purchase or stock control they are usually counted as one system. The associated companies comprising the Bell Telephone System and also other large companies which furnished separate reports were counted as separate units. The number of systems in the report, therefore, represents only the number of separate ownerships reporting without regard to the character of the ownership.

"Company" or "system" is generally applied to the larger units. The term "line" denotes a farmer or rural line which may consist of one or more lines of wire but which is under independent ownership. It, therefore, represents one of the small statistical units.

Each independent farmer or rural line, however small, was counted as a separate unit provided it was under independent ownership. Doubtless, in some instances a single report was made for a number of independent farmer lines that connected at a common exchange. It is believed, however, that the number of such instances is small and that the 51,034 systems and lines reported as having annual incomes of less than \$5,000 may be accepted as a very close approximation of the actual number. The apparent large increase in farmer and rural lines from the 30,317 reported in 1912 to the 51,034 reported in 1917 is not due so much to an actual increase in the number of lines as to the fact that the number was understated to some extent at the census of 1912.

Since the usage of the terms "systems" and "lines" is not always the same, the number is no indication of the magnitude of the interests, nor is it in any way a guide as to the number of exchanges. The processes of consolidation may have resulted in an actual decrease in the number of companies but at the same time the number of exchanges, miles of wire, number of telephones, and amount of business transacted may have increased.

Limitations of the statistics.—Data for 1917 for all systems and lines, large and small combined, are confined to a comparatively small number of items. It was found impossible at previous censuses to secure accurate information concerning the smaller lines and systems. In fact, at earlier censuses the only really accurate information obtained was confined to the miles of wire and the number of telephones in use. At the present census in addition to these data, the number of systems operating switchboards, the number of messages or talks, the number of employees, the total gross receipts, the amount of wages paid, and the amount of the total investment were secured for telephone lines and systems reporting annual incomes of

less than \$5,000. In some cases companies did not have books from which exact data regarding all the items on the schedule could be obtained and it was necessary to secure estimates.

At the censuses of 1902 and 1907 the financial statistics, employees, wages, etc., were shown for the separate states. This presentation required estimates for the segregation of the state figures for companies that operated in different states. The extent of these estimates was not so great for 1902 as it was for 1907. By 1912, however, such a large proportion of the companies and systems operated in more than one state that it was decided to abandon the state presentation, except for the miles of wire, the number of telephones and exchanges, and the estimated number of messages or talks. The number of messages includes local or exchange and long-distance or toll messages, and these

latter are necessarily credited to the state in which the exchange through which the original call was made is located.

The uniform system of accounts provided for telephone companies by the Interstate Commerce Commission, which has been in use since January 1, 1913, has aided the Bureau of the Census considerably in obtaining accurate and uniform statistics of the telephone business. This system of accounts, however, is compulsory only for companies having an annual income of \$10,000 or more. Consequently, many of the smaller companies as well as all of the larger systems which have no interstate business are not required by law to keep their records in a uniform manner. However, the statistics presented for 1917 are undoubtedly much more accurate than those for any previous census.

CHAPTER II.—DEVELOPMENT OF THE INDUSTRY.

Summary for 1917.—The first presentation of statistics in this report is a summary of the telephone industry as a whole for 1917. Data, which were collected only for those companies having an annual income of \$5,000 or more, are shown separately in later tables of the report, as well as the data which were reported by the systems having an income of less than \$5,000.

Table 1 summarizes the more important statistics of the telephone industry for 1917 and distinguishes the data for the Bell Telephone System, which includes all lines operated by the American Telephone & Telegraph Co. and its associated companies; the systems and lines other than Bell, having an income of \$5,000 or more; and those systems and lines having an income of less than \$5,000.

Table 1

	All systems and lines.	Bell Telephone System.	ALL OTHER SYSTEMS.	
			Reporting annual incomes of \$5,000 or more.	Reporting annual incomes of less than \$5,000.
Number of systems or lines.....	53,234	145	2,055	51,034
Miles of wire.....	¹ 28,827,188	23,133,718	4,164,308	1,529,162
Number of telephones.....	11,716,520	7,323,858	2,626,852	1,762,810
Estimated number of messages or talks.....	21,845,722,335	14,597,567,869	5,211,493,216	2,036,661,250
Number of public exchanges.....	21,175	6,283	6,006	28,881
Number of employees.....	262,629	198,700	45,790	18,139
Male.....	91,510	69,457	15,782	6,271
Female.....	171,119	129,243	30,008	11,868
Salaries and wages paid.....	\$175,670,449	\$144,914,867	\$24,740,199	\$6,015,383
Revenue, operating and nonoperating ²	\$391,499,631	\$311,918,260	\$60,583,540	\$18,997,831
Value of plant and equipment.....	\$1,492,329,015	\$1,140,639,666	\$295,272,476	\$56,416,873
Per cent of total:				
Number of systems or lines.....	100.0	0.3	3.9	95.9
Miles of wire.....	100.0	80.2	14.4	5.3
Number of telephones.....	100.0	62.5	22.4	15.0
Number of messages or talks.....	100.0	66.8	23.9	9.3
Number of public exchanges.....	100.0	29.7	28.4	41.9
Number of employees.....	100.0	75.7	17.4	6.9
Salaries and wages paid.....	100.0	82.5	14.1	3.4
Revenue, operating and nonoperating.....	100.0	79.7	15.5	4.8
Value of plant and equipment.....	100.0	76.4	19.8	3.8

¹ Exclusive of 2,835 miles in Canada.

² Number of systems reporting exchanges, actual number of exchanges not reported.

³ Including assessments of mutual companies.

As previously explained, the statistics do not include data for telephone lines of steam or electric railways operated in connection with the conduct of the roads, for private lines in hotels and manufacturing and other establishments, or for lines operated by Federal, state, or municipal offices. The inclusion of these figures, however, would make very little difference in the totals. The census figures for the Bell System do not agree exactly with those contained in the annual report of the directors of the company, because the former include certain affiliated and controlled companies not included in the annual report.

The Bell Telephone System is the dominating factor in the industry, reporting more than four-fifths of the total miles of wire and more than three-fifths of the total number of telephones. The Bell Telephone System reported more than 3 miles of wire to each telephone in 1917, while all other systems having annual incomes of \$5,000 or more reported a little more than 1½ miles of wire per telephone, and the small systems and lines (those having annual incomes of less than \$5,000) reported less than one mile of wire to each telephone.

The total revenue as shown in this table involves a certain amount of duplication. A large proportion of

the lines having annual incomes of less than \$5,000 do not own an exchange, but are connected with an independently owned exchange through which the messages originating on these lines are "switched." The "switching charge" for payment to the organization owning the exchange is the chief revenue of these independent farmer or rural lines, and it is, of course, also a part of the revenue of the larger system which owns the exchange. This involves a duplication within the group of systems and lines reporting annual incomes of less than \$5,000 and also considerable duplication between this group and the Bell and large non-Bell systems.

The number of messages or talks per telephone per year was almost 2,000 for the Bell and larger non-Bell systems, but less than 1,200 for the smaller lines and systems. The Bell System and the larger non-Bell systems ordinarily make an actual count of the messages or talks at least as often as one day in each month; their estimates, therefore, may be considered to be quite accurate. For the smaller lines or systems, no such basis for securing a careful estimate of the messages or talks exists; nevertheless, it is believed that the estimated number, which was given in most cases by the manager or chief operator of each local

exchange, is sufficiently accurate for all practical purposes.

All of the companies, systems, or lines having incomes of less than \$5,000, reported whether or not they operated public exchanges. These small systems, however, except in a very few cases, did not report how many exchanges they operated. Consequently, the number of exchanges shown in the accompanying table is, to a slight degree, understated. It is believed, however, that this fact makes little difference in the significance of the figures shown.

Comparison with previous censuses.—Table 2 presents statistics for number of systems and lines, miles of wire, and number of telephones for each census from 1902 to 1917 and for 1890 and 1880, and also shows separately statistics for the Bell System and all other systems for each census from 1902 to 1917.

	Census year.	Number of systems and lines.	Miles of wire. ¹	Number of telephones.
All systems and lines.....	1917	53,234	28,827,188	11,716,520
	1912	32,233	20,248,326	8,729,592
	1907	22,971	12,999,364	6,118,578
	1902	9,136	4,900,451	2,371,044
	² 1890	53	240,412	233,678
	² 1880	148	34,305	54,319
Bell Telephone System.....	1917	145	23,133,718	7,326,858
	1912	176	15,133,186	5,087,027
	1907	175	8,947,266	3,132,063
	1902	44	3,387,924	1,317,178
All other systems.....	1917	53,089	5,693,470	4,389,662
	1912	32,057	5,115,140	3,642,565
	1907	22,796	4,052,098	2,986,515
	1902	9,092	1,512,527	1,053,866

¹ Exclusive of 2,835 miles in Canada in 1917, 1,565 miles in 1912, and 5 miles in 1907.

² Partial enumeration only; figures not strictly comparable with later censuses.

Almost two years elapsed after the issue of the original patent to Alexander Graham Bell on March 7, 1876, before the first public telephone exchange was opened for business at New Haven, Conn., on January 25, 1878. The first census of the industry (in 1880) covered a period of such unprecedented development that it was very difficult to secure accurate reports from the telephone organizations. Many, if not the most, of the 148 telephone systems reporting had begun their operations during the year and their reports to the Bureau of the Census were correspondingly fragmentary and incomplete. Very little interest was exhibited in the new industry at the beginning of the census year, but at the close it was obvious that the telephone was destined to be one of the great interests of the country.

The use of the telephone showed a rapid advance during the 10 years that elapsed between 1880 and 1890. The conditions of the industry in 1890, as well as the census methods employed at that time, however, were such that the statistics are not strictly comparable with those for subsequent censuses.

During the first half of the term of the Bell patents, a number of rival systems were brought into existence

by competitors, that of the American Speaking Telephone Co., a subsidiary of the Western Union Telegraph Co., being the most formidable and extensive. Patent litigation between these rivals began in September 1878; but very soon thereafter an agreement between them was effected by which the Western Union conceded the priority of the Bell patents and turned over to the Bell System all its inventions, apparatus, and exchanges. In return for this the Bell Co. agreed to pay to the Western Union Co. 20 per cent of its income during the life of the contract, 17 years. This combination not only unified the commercial telephone systems of the country but it also harmonized and standardized the apparatus; while this promoted industrial and scientific development, it resulted in almost completely discouraging competition, the telephone industry being a virtual monopoly for the succeeding decade and a half.

As the term of the fundamental Bell patents drew to a close, competition again developed and independent exchanges were started in various parts of the country. At first these were started only in places which, under exclusive Bell régime, had not enjoyed the benefit of telephone service; and, although independent exchanges were established and in some cases still exist in a few of the larger cities, the "independent" movement, particularly fostered and pushed in the rural districts, still maintains its best patronage outside of the large urban centers.

The Bell System has not only reported a much greater wire mileage and number of telephones at each of the last four census periods than all the other systems combined, but its relative importance in these respects is becoming greater from census to census. The Bell System reported 62.5 per cent of the total number of telephones in the country in 1917, 58.3 per cent in 1912, 51.2 per cent in 1907, and 55.6 per cent in 1902. There were, in addition, 3,164,902 telephones in 1917, and 2,369,047 in 1912, not owned by the Bell System but which were connected with the Bell lines and exchanges for the interchange of local and long-distance service. Although these telephones were neither Bell-owned nor Bell-controlled, they should be reckoned as a part of the Bell System when considering the scope of the service afforded by it. Thus, in 1917, 10,491,760 telephones, or 89.5 per cent of the total telephones in the country and, in 1912, 7,456,074 or 85.4 per cent of the total telephones, were connected with the Bell System. The number of telephones reported by the Bell System increased 456.3 per cent from 1902 to 1917, while the number reported by the other systems increased 316.5 per cent during this 15-year period.

The miles of wire reported by the Bell System constituted 80.2 per cent of the total for the entire country in 1917, 74.7 per cent in 1912, 68.8 per cent in 1907, and 69.1 per cent in 1902. The miles of wire

reported by the Bell System increased 582.8 per cent from 1902 to 1917, while the wire mileage reported by the non-Bell telephone systems increased only 276.4 per cent during the 15-year period.

A comparison of the increase of the Bell System with those of the other telephone systems may easily be misleading. The Bell System has grown both by the building of new lines and installation of new equipment and also by the acquisition of lines and systems formerly independent of it. The normal growth of non-Bell systems, on the other hand, has been considerably counterbalanced by the change of

some companies from "independents" to subsidiaries or integral parts of the Bell System.

Although the statistics of telephones for 1880 and 1890 are not strictly comparable with those for later censuses, a comparison of these data is of interest, as an indication of the growth of the industry from its first stages. Table 3, therefore, is a comparative summary showing the more important statistics for the telephone systems having annual incomes of \$5,000 or more, for each census from 1880 to 1917, with percentages of increase for the last three census periods.

Table 3

SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE.

	1917	1912	1907	1902 ¹	1890 ²	1880 ²	Per cent of increase.		
							1907-1917	1912-1917	1907-1912
Number of systems and lines.....	2,200	1,916	1,636	4,151	53	148	34.5	14.8	17.1
Miles of wire.....	27,298,026	19,019,391	11,921,960	4,850,486	240,412	34,305	129.0	43.5	59.5
Number of telephones.....	9,953,710	7,326,748	4,906,693	2,315,297	233,678	54,319	102.8	35.6	49.3
Number of public exchanges.....	12,294	11,515	10,613	10,361	1,241	437	15.4	6.8	8.5
Estimated number of messages or talks.....	19,809,061,085	13,735,658,245	10,400,433,958	5,070,554,553	453,200,000	(³)	90.5	44.2	32.1
Number of employees.....	244,490	183,361	131,670	78,752	8,645	3,338	85.7	33.3	39.3
Salaries and wages paid.....	\$169,655,066	\$96,040,541	\$65,009,349	\$36,255,621	(³)	(³)	161.0	76.6	40.7
Revenue, operating and nonoperating.....	\$372,501,800	\$253,893,969	\$175,750,446	\$86,825,536	\$16,404,583	\$3,098,081	111.9	46.7	44.5
Expenses, including taxes and fixed charges...	\$313,103,060	\$202,567,644	\$134,525,215	\$65,164,771	\$11,143,871	\$2,373,703	132.7	54.6	50.6
Capital stocks and funded debt.....	\$1,169,073,870	\$970,690,992	\$739,876,688	\$348,031,058	\$72,341,736	\$14,605,787	58.0	20.4	31.2

¹ Exclusive of "farmer or rural lines," but including some systems which had incomes of less than \$5,000.

² Partial enumeration only; figures not strictly comparable with later censuses.

³ Not reported.

⁴ Exclusive of "payments for telephone traffic made to other companies," to the amount of \$1,187,265, in 1912, and \$949,962, in 1907.

⁵ For 132 systems; 16 systems did not report this item.

⁶ Exclusive of treasury stock and bonds to the amount of \$21,735,415, but including real-estate mortgages of incorporated companies to the amount of \$1,132,292.

⁷ Exclusive of \$19,434,007 of treasury stock and bonds, and including \$1,188,481 of real-estate mortgages.

⁸ For 72 systems; 76 systems did not report this item.

The statistics for 1902 exclude data for the "farmer or rural lines" but include figures for all commercial or mutual systems which operated switchboards even if they reported annual incomes of less than \$5,000. When it was decided in 1912 that detailed statistics should not be secured from companies reporting less than \$5,000 annual income during the census year, the published returns for the commercial and mutual systems for the preceding census (1907) were revised so as to exclude the statistics for systems reporting an annual income of less than \$5,000. It was not possible, however, to make this revision in the returns for 1902, since the original schedules had been destroyed. Consequently, comparable figures are available only for 1917, 1912, and 1907.

Accretions to the number of systems and to the number of exchanges come in part from the change in classification of the reports due to increasing income. At each census some of the smaller systems having had an annual income of less than \$5,000 at the preceding census pass to the class having annual incomes of more than \$5,000. The increases in miles of wire, number of telephones, etc., however, are due much more to the normal increase in business than to the passing of the companies from the class of com-

panies reporting less than \$5,000 of annual income to the group reporting \$5,000 or more.

The schedule used to secure reports in 1912 and 1907 called for "payments for telephone traffic made to other companies" to be included as one of the items of expense. No such item was included in 1917, the companies being specifically instructed to deduct such amounts from both income and expenditures before making their reports to the Bureau of the Census. In order to make the statistics for income and expenses for 1917, 1912, and 1907 strictly comparable, therefore, "payments for telephone traffic made to other companies" to the amount of \$1,187,265 in 1912 and \$949,962 in 1907 have been deducted from the figures published at the earlier censuses.

Telephone and telegraph systems.—Both telephone and telegraph systems have the same primary object, to furnish quick and satisfactory communication between distant points. The telegraph, moreover, was thoroughly established considerably before the invention of the telephone. The telephone has, however, rapidly outdistanced the telegraph in magnitude. A comparison of the statistics for telephones and telegraphs as reported at each of the last four censuses is presented in Table 4.

Table 4

	Census year.	TELEPHONE AND TELEGRAPH SYSTEMS.				
		Total.	Telephones. ¹	Telegraphs. ²	Per cent of total.	
					Tele-phones.	Tele-graphs.
Number of systems and lines.....	1917	53,261	53,234	27	99.9	0.1
	1912	32,260	32,233	27	99.9	0.1
	1907	22,997	22,971	26	99.9	0.1
	1902	9,161	9,136	25	99.7	0.3
Miles of single wire.....	1917	30,717,433	28,827,188	³ 1,890,245	93.8	6.2
	1912	22,062,522	20,248,326	³ 1,814,196	91.8	8.2
	1907	14,577,325	12,999,364	1,577,961	89.2	10.8
	1902	6,218,801	4,900,451	1,318,350	78.8	21.2
Ocean cable, nautical miles.....	1917	71,251	.....	71,251	.....	100.0
	1912	67,676	.....	67,676	.....	100.0
	1907	46,301	.....	46,301	.....	100.0
	1902	16,677	.....	16,677	.....	.....
Employees and salaries and wages:						
Number.....	1917	296,064	244,490	51,574	82.6	17.4
	1912	220,656	183,361	37,295	83.1	16.9
	1907	172,203	144,166	28,034	83.7	16.3
	1902	106,379	78,752	27,627	74.0	26.0
Salaries and wages.....	1917	\$209,298,977	\$169,655,066	\$39,643,911	81.1	18.9
	1912	\$121,005,535	\$96,040,541	\$24,964,994	79.4	20.6
	1907	\$86,087,376	\$68,279,127	\$17,808,249	79.3	20.7
	1902	\$51,295,294	\$36,255,621	\$15,039,673	70.7	29.3
Capital stock and funded debt, including real-estate mortgages of incorporated companies.	1917	\$1,398,161,656	\$1,169,073,870	\$229,087,786	83.6	16.4
	1912	\$1,197,077,802	\$970,690,992	\$226,386,810	81.1	18.9
	1907	\$960,170,263	\$739,876,688	\$220,293,575	77.0	23.0
	1902	\$510,977,583	\$348,031,058	\$162,946,525	68.1	31.9
Revenue, operating and nonoperating.....	1917	\$482,205,228	\$372,501,800	\$109,703,428	77.2	22.8
	1912	\$318,656,812	\$253,893,969	\$64,762,843	79.7	20.3
	1907	\$227,334,314	\$175,750,446	\$51,583,868	77.3	22.7
	1902	\$127,755,574	\$86,825,536	\$40,930,038	68.0	32.0
Expenses, including taxes and fixed charges.....	1917	\$404,974,219	\$313,103,060	\$91,871,159	77.3	22.7
	1912	\$260,946,596	\$202,567,644	\$58,378,952	77.6	22.4
	1907	\$176,404,828	\$134,525,215	\$41,879,613	76.3	23.7
	1902	\$96,112,805	\$65,164,771	\$30,948,034	67.8	32.2

¹ For number of systems and lines and for miles of wire all systems and lines are included; for the other items the figures for 1902 are exclusive of farmer lines and systems, and the figures for 1917, 1912, and 1907 are exclusive of lines and systems having annual incomes of less than \$5,000.

² Does not include wireless telegraph systems.

³ Exclusive of 344,110 miles of wire in 1917 and 314,329 miles in 1912 owned and operated by railway companies.

The census of 1880 showed telegraph companies to be operating 291,213 miles of wire, as compared with 34,305 miles for the telephone companies. Twenty-two years later the amount of wire operated by telegraph systems was more than four and one-half times as great, while the amount operated by telephone systems was more than one hundred and forty times as great. The amount of telephone wire has increased from 7,000,000 to 8,000,000 miles for each five-year period since 1902, a total increase for the fifteen years, 1902-1917, of 488.3 per cent. The total increase in the amount of telegraph wire during this fifteen-year period was only 571,895 miles, or 43.4 per cent.

States and geographic divisions.—The extent of the telephone business in the different states is determined very largely by the density of the population. Thus almost one-half of the telephones and more than one-half of the miles of wire are found in the Middle Atlantic and East North Central states. The extent of the industry in the different geographic divisions and states is shown by Tables 5, 6, and 7. Of these, Table 5 shows the number of systems and lines for 1917, 1912, and 1907, giving separately those systems reporting annual incomes of \$5,000 or more, and those reporting incomes of less than \$5,000, by geographic divisions and states.

Table 5

Table 5	NUMBER OF SYSTEMS AND LINES.									DIVISION AND STATE.	NUMBER OF SYSTEMS AND LINES.								
	Total.			Reporting incomes of \$5,000 or more.			Reporting incomes of less than \$5,000.				Total.			Reporting incomes of \$5,000 or more.			Reporting incomes of less than \$5,000.		
DIVISION AND STATE.	1917	1912	1907	1917	1912	1907	1917	1912	1907	DIVISION AND STATE.	1917	1912	1907	1917	1912	1907	1917	1912	1907
UNITED STATES.....	53,234	32,233	22,971	2,200	1,916	1,636	51,034	30,317	21,335	SOUTH ATLANTIC:									
GEOGRAPHIC DIVISIONS:										Delaware.....	48	51	1	1	1	.....	47	50	1
New England.....	384	377	366	54	49	47	330	328	319	Maryland.....	169	153	25	1	4	8	168	149	17
Middle Atlantic.....	2,809	2,319	1,572	233	201	172	2,576	2,118	1,400	Virginia.....	683	337	290	26	19	17	657	318	273
East North Central.....	7,705	4,960	4,922	739	664	547	6,966	4,296	4,375	West Virginia.....	383	298	195	10	13	18	373	285	177
West North Central.....	17,483	10,679	9,641	656	551	465	16,827	10,128	9,176	North Carolina.....	1,039	625	400	30	22	12	1,009	603	388
South Atlantic.....	4,189	2,717	1,373	137	110	94	4,052	2,607	1,279	South Carolina.....	538	393	143	10	9	7	528	384	136
East South Central.....	4,900	3,006	1,211	72	78	73	4,828	2,928	1,138	Georgia.....	1,207	776	224	38	25	24	1,169	751	200
West South Central.....	10,244	5,851	2,329	155	134	142	10,089	5,717	2,187	Florida.....	122	84	95	21	17	8	101	67	87
Mountain.....	1,560	972	471	50	35	46	1,510	937	425	EAST SOUTH CENTRAL:									
Pacific.....	3,960	1,352	1,086	104	94	50	3,856	1,258	1,036	Kentucky.....	1,600	993	429	42	47	42	1,558	946	387
NEW ENGLAND:										Tennessee.....	1,416	1,076	214	13	15	15	1,403	1,061	199
Maine.....	204	173	153	18	16	15	186	157	138	Alabama.....	945	484	297	12	8	8	933	476	289
New Hampshire.....	60	70	58	9	8	4	51	62	54	Mississippi.....	939	453	271	5	8	8	934	445	263
Vermont.....	91	95	100	16	14	15	75	81	85	WEST SOUTH CENTRAL:									
Massachusetts.....	19	30	38	6	5	8	13	25	30	Arkansas.....	1,965	1,042	547	24	19	31	1,941	1,023	516
Rhode Island.....	1	2	2	1	2	.....	.....	.....	2	Louisiana.....	445	183	69	5	3	5	440	180	64
Connecticut.....	9	7	15	4	4	5	5	3	10	Oklahoma.....	2,617	1,363	715	38	27	22	2,579	1,336	693
MIDDLE ATLANTIC:										Texas.....	5,217	3,263	998	88	85	84	5,129	3,178	914
New York.....	1,091	879	942	111	101	111	980	778	831	MOUNTAIN:									
New Jersey.....	104	104	33	13	14	13	91	90	20	Montana.....	283	155	97	7	11	8	276	144	89
Pennsylvania.....	1,614	1,336	597	109	86	48	1,505	1,250	549	Idaho.....	337	202	82	7	5	3	330	197	79
EAST NORTH CENTRAL:										Wyoming.....	172	125	64	3	.....	.....	169	125	64
Ohio.....	944	775	984	195	203	181	749	572	803	Colorado.....	503	320	104	6	5	7	497	315	97
Indiana.....	1,675	1,098	883	163	151	129	1,512	947	754	New Mexico.....	114	65	47	6	2	10	108	63	37
Illinois.....	2,637	1,256	1,817	198	165	145	2,439	1,091	1,672	Arizona.....	49	35	37	5	2	6	44	33	31
Michigan.....	1,358	1,028	534	60	53	36	1,298	975	498	Utah.....	62	45	19	7	3	6	55	42	13
Wisconsin.....	1,091	803	704	123	92	56	968	711	648	Nevada.....	40	25	21	9	7	6	31	18	15
WEST NORTH CENTRAL:										PACIFIC:									
Minnesota.....	2,089	1,372	825	102	77	55	1,987	1,295	770	Washington.....	1,094	363	480	26	29	13	1,068	334	467
Iowa.....	5,223	3,444	3,445	152	146	129	5,071	3,298	3,316	Oregon.....	958	323	295	27	20	8	931	303	287
Missouri.....	4,746	2,301	2,648	113	89	71	4,633	2,212	2,577	California.....	1,908	666	311	51	45	29	1,857	621	282
North Dakota.....	746	372	259	41	29	21	705	343	238										
South Dakota.....	661	467	330	41	31	24	620	436	306										
Nebraska.....	1,402	876	891	81	79	79	1,321	797	812										
Kansas.....	2,616	1,847	1,243	126	100	86	2,490	1,747	1,157										

Telephone systems reporting annual incomes of \$5,000 or more numbered 2,200 in 1917; of these, 145 were different systems affiliated with the American Telephone and Telegraph Co. (the Bell System). The business conducted by many of these Bell companies extended over several states and was assigned in Table 5, however, to the state in which the main office was located.

Considerably more than half of the larger telephone systems (reporting annual incomes of \$5,000 or more in 1917) are located in the Middle West. The two groups of states which comprise this region (the East North Central and the West North Central states) reported 63.4 per cent of the total number of the larger systems. If the states were ranked according to the number of these large telephone systems reported, the first seven—Illinois, Ohio, Indiana, Iowa, Kansas, Wisconsin, and Missouri—would all be in the Middle West. In fact, these seven states alone reported 1,070 systems, or slightly less than one-half (48.6 per cent) of the total for the entire United States.

Systems and lines reporting annual incomes of less than \$5,000 in 1917 are found in the largest numbers in the West North Central states, almost one-third (33 per cent) of the total for the United States being reported for this region. Five of the New England states and Ohio were the only states which showed a decrease for the decade 1907–1917 in the number of smaller telephone lines and systems reported.

Table 6 shows the total miles of wire for 1917, 1912, 1907, and 1902, giving separately that for systems reporting annual incomes of \$5,000 or more and for those reporting incomes of less than \$5,000 for 1917, 1912, and 1907. Table 7 presents statistics for number of telephones similar to those presented in Table 6 for wire mileage.

Tables 8 and 9 show the per cent of increase and the per cent distribution, respectively, based on the figures in Tables 6 and 7.

Table 6

Table 6	MILES OF WIRE.										
	DIVISION AND STATE.	Total.				Systems reporting annual incomes of \$5,000 or more.			Systems reporting annual incomes of less than \$5,000.		
		1917	1912	1907	1902	1917	1912	1907	1917	1912	1907
UNITED STATES.....	28,827,188	20,248,326	12,999,364	4,900,451	27,298,026	19,019,391	11,921,960	1,529,162	1,228,935	1,077,404	
GEOGRAPHIC DIVISIONS:											
New England.....	2,383,580	1,545,252	997,865	408,337	2,365,292	1,523,273	973,915	18,288	21,979	23,950	
Middle Atlantic.....	7,338,055	5,035,019	3,056,193	1,261,843	7,246,573	4,949,078	2,985,774	91,482	85,941	70,419	
East North Central.....	7,137,419	4,645,218	3,308,021	1,466,145	6,801,515	4,353,416	3,011,164	335,904	291,802	296,857	
West North Central.....	3,934,372	2,932,578	2,043,383	588,290	3,450,826	2,530,833	1,664,769	483,546	401,745	378,614	
South Atlantic.....	1,735,286	1,121,458	875,173	328,022	1,608,351	1,016,144	790,932	126,935	105,314	84,241	
East South Central.....	1,107,025	977,694	714,871	305,089	982,613	896,912	661,470	124,412	80,782	53,401	
West South Central.....	1,912,756	1,312,553	799,606	236,884	1,686,562	1,152,823	692,602	226,194	159,730	107,004	
Mountain.....	725,512	558,450	364,605	88,846	683,950	525,976	342,413	41,562	32,474	22,192	
Pacific.....	2,553,183	2,120,104	839,647	216,995	2,472,344	2,070,936	798,921	80,839	49,168	40,726	
NEW ENGLAND:											
Maine.....	176,983	141,687	94,073	25,451	168,633	132,127	86,258	8,350	9,560	7,815	
New Hampshire.....	110,691	75,917	49,448	18,390	107,588	72,350	44,370	3,103	3,567	5,078	
Vermont.....	67,355	54,756	36,419	16,379	61,510	48,387	29,275	5,845	6,369	7,144	
Massachusetts.....	1,353,251	863,426	534,220	257,461	1,352,395	861,107	531,834	856	2,319	2,386	
Rhode Island.....	161,075	102,906	71,346	90,656	161,075	102,906	70,943	134	164	403	
Connecticut.....	514,225	306,560	212,359		514,091	306,396	211,235				
MIDDLE ATLANTIC:											
New York.....	4,154,657	2,790,060	1,630,076	623,625	4,118,929	2,758,352	1,597,855	35,728	31,708	32,221	
New Jersey.....	1,002,075	644,984	338,608	136,617	999,262	642,190	335,721	2,813	2,794	2,887	
Pennsylvania.....	2,181,323	1,599,975	1,087,509	501,601	2,128,382	1,548,536	1,052,198	52,941	51,439	35,311	
EAST NORTH CENTRAL:											
Ohio.....	1,906,635	1,161,032	986,053	515,892	1,849,165	1,109,216	931,850	57,470	51,816	54,203	
Indiana.....	933,261	667,839	530,044	213,157	857,579	602,740	454,636	75,682	65,099	75,408	
Illinois.....	2,564,910	1,689,074	986,949	428,301	2,478,371	1,608,428	890,838	86,539	80,646	96,111	
Michigan.....	1,072,651	728,184	494,612	197,863	1,025,710	689,671	467,527	46,941	38,513	27,085	
Wisconsin.....	650,962	399,089	310,363	110,929	590,690	343,361	266,313	69,272	55,728	44,050	
WEST NORTH CENTRAL:											
Minnesota.....	1,058,989	653,479	387,758	137,274	985,128	597,883	343,168	73,861	55,596	44,590	
Iowa.....	650,513	504,101	360,884	147,586	550,957	419,672	268,432	99,556	84,429	92,452	
Missouri.....	1,119,048	874,334	640,560	177,072	1,005,139	779,712	547,643	113,909	94,622	92,917	
North Dakota.....	105,820	76,174	61,728	9,532	76,865	58,512	50,079	28,955	17,662	11,649	
South Dakota.....	104,208	73,921	66,946	10,877	78,184	51,164	50,566	26,024	22,757	16,380	
Nebraska.....	448,807	393,319	257,812	53,285	398,685	349,646	211,464	50,122	43,673	46,348	
Kansas.....	446,987	357,250	267,695	52,664	355,868	274,244	193,417	91,119	83,006	74,278	
SOUTH ATLANTIC:											
Delaware.....	75,196	48,632	35,585	107,827	74,483	48,037	35,575	713	595	10	
Maryland.....	354,588	228,744	187,135		352,077	225,476	184,599	2,511	3,268	2,536	
Distriet of Columbia.....	162,032	126,279	89,562		162,032	126,279	89,562				
Virginia.....	271,549	161,136	108,588	46,678	248,422	142,023	91,717	23,127	19,113	16,871	
West Virginia.....	179,387	112,954	99,844	56,812	155,685	94,397	85,696	23,702	18,557	14,148	
North Carolina.....	148,348	109,110	83,251	26,120	115,622	82,537	59,695	32,726	26,573	23,556	
South Carolina.....	97,916	73,712	50,226	19,445	85,952	62,781	39,981	11,964	10,931	10,245	
Georgia.....	314,273	206,591	187,904	54,301	288,273	185,737	177,322	26,000	20,854	10,582	
Florida.....	131,997	54,300	33,078	16,839	125,805	48,877	26,785	6,192	5,423	6,293	
EAST SOUTH CENTRAL:											
Kentucky.....	386,107	352,544	262,691	155,482	348,946	324,212	242,337	37,161	28,332	20,354	
Tennessee.....	368,678	287,685	202,505	86,640	320,598	256,959	189,980	48,080	30,726	12,525	
Alabama.....	206,585	152,849	134,337	32,966	185,089	140,123	125,129	21,496	12,726	9,208	
Mississippi.....	145,655	184,616	115,338	30,001	127,980	175,618	104,024	17,675	8,998	11,314	
WEST SOUTH CENTRAL:											
Arkansas.....	170,105	141,014	98,932	24,273	142,508	119,765	80,939	27,597	21,249	17,993	
Louisiana.....	196,917	138,905	101,325	49,588	189,708	135,248	98,313	7,209	3,657	3,012	
Oklahoma.....	334,533	211,175	104,780	21,498	281,753	170,055	81,798	52,780	41,120	22,982	
Texas.....	1,211,201	821,459	494,569	141,525	1,072,593	727,755	431,552	138,608	93,704	63,017	
MOUNTAIN:											
Montana.....	94,666	54,259	28,386	8,609	85,745	47,172	23,547	8,921	7,087	4,839	
Idaho.....	81,745	58,205	37,364	6,366	74,011	52,394	33,977	7,734	5,811	3,387	
Wyoming.....	30,435	20,368	11,743	13,106	24,938	15,634	8,750	5,497	4,734	2,993	
Utah.....	120,938	112,726	80,653		118,288	109,678	79,704	2,650	3,048	949	
Colorado.....	312,326	261,987	173,633	52,115	301,756	254,588	168,224	10,570	7,399	5,409	
New Mexico.....	31,963	22,492	12,506	3,366	27,874	20,418	10,208	4,089	2,074	2,298	
Arizona.....	39,455	18,621	10,277	3,890	38,299	17,193	9,008	1,156	1,428	1,269	
Nevada.....	13,984	9,792	10,043	1,394	13,039	8,899	8,995	945	893	1,048	
PACIFIC:											
Washington.....	429,718	487,079	208,810	43,027	403,414	470,350	195,067	26,304	16,729	13,743	
Oregon.....	275,191	272,481	87,723	29,531	251,523	257,718	74,646	23,668	14,763	13,077	
California.....	1,848,274	1,360,544	543,114	144,437	1,817,407	1,342,868	529,208	30,867	17,676	13,906	

ELECTRICAL INDUSTRIES: 1917.

Table 7

Table 7	NUMBER OF TELEPHONES.										
	DIVISION AND STATE.	Total.				Systems reporting annual incomes of \$5,000 or more.			Systems reporting annual incomes of less than \$5,000.		
		1917	1912	1907	1902	1917	1912	1907	1917	1912	1907
UNITED STATES.....	11,716,520	8,729,592	6,118,578	2,371,044	9,953,710	7,326,748	4,906,693	1,762,810	1,402,844	1,211,885	
GEOGRAPHIC DIVISIONS:											
New England.....	878,354	625,488	410,269	166,167	856,658	600,207	384,413	21,696	25,281	25,856	
Middle Atlantic.....	2,444,205	1,782,145	1,252,903	483,054	2,332,774	1,675,681	1,167,667	111,431	106,464	85,236	
East North Central.....	3,158,989	2,378,257	1,712,390	740,059	2,745,921	2,020,802	1,360,544	413,068	357,455	351,846	
West North Central.....	2,119,735	1,621,523	1,251,555	399,855	1,500,091	1,109,359	767,050	619,644	512,164	484,505	
South Atlantic.....	739,631	531,402	365,764	146,765	604,704	428,311	296,271	134,927	103,091	69,493	
East South Central.....	436,853	337,292	243,234	112,851	309,636	261,294	197,291	127,217	75,998	45,943	
West South Central.....	740,004	543,102	342,255	114,939	504,929	387,022	239,746	235,075	156,080	102,509	
Mountain.....	307,627	226,652	154,061	48,067	277,893	204,508	141,339	29,734	22,144	12,722	
Pacific.....	891,122	683,731	386,147	159,287	821,104	639,564	352,372	70,018	44,167	33,775	
NEW ENGLAND:											
Maine.....	88,226	68,914	53,134	14,070	78,111	57,988	43,846	10,115	10,926	9,288	
New Hampshire.....	52,534	40,017	28,920	9,949	49,536	36,052	24,345	2,998	3,965	4,575	
Vermont.....	47,968	40,142	30,833	12,151	40,611	31,498	22,117	7,357	8,644	8,716	
Massachusetts.....	475,231	329,992	209,383	96,512	474,427	328,503	207,201	804	1,489	2,182	
Rhode Island.....	64,726	41,664	24,099	33,485	64,726	41,664	23,929	422	257	170	
Connecticut.....	149,669	104,759	63,900		149,247	104,502	62,975			925	
MIDDLE ATLANTIC:											
New York.....	1,335,055	970,449	685,512	347,340	1,283,802	923,136	637,881	51,253	47,313	47,631	
New Jersey.....	254,444	185,632	116,988	48,980	251,519	182,419	114,528	2,925	3,213	2,460	
Pennsylvania.....	854,706	626,064	450,403	186,734	797,453	570,126	415,258	57,253	55,938	35,145	
EAST NORTH CENTRAL:											
Ohio.....	845,649	631,206	495,636	224,083	774,122	567,573	431,851	71,527	63,633	63,785	
Indiana.....	458,992	354,550	289,452	136,561	366,928	274,291	202,492	92,064	80,259	86,960	
Illinois.....	1,070,997	807,253	558,555	221,008	952,964	704,230	434,518	118,033	103,023	124,067	
Michigan.....	434,128	335,074	209,842	95,415	380,200	288,154	179,263	53,928	46,920	30,579	
Wisconsin.....	349,223	250,174	158,875	62,992	271,707	186,554	112,420	77,516	63,620	46,455	
WEST NORTH CENTRAL:											
Minnesota.....	408,222	272,359	171,479	63,192	325,977	208,340	125,884	82,245	64,019	45,595	
Iowa.....	489,432	380,294	332,545	138,400	320,757	242,963	187,938	168,675	137,331	144,607	
Missouri.....	511,246	404,150	312,527	103,155	365,463	285,472	192,943	145,783	118,678	119,584	
North Dakota.....	75,349	51,241	34,087	6,762	47,613	32,915	20,835	27,736	18,326	13,252	
South Dakota.....	88,946	65,858	48,405	10,387	58,237	39,299	27,801	30,709	26,559	20,604	
Nebraska.....	248,267	201,689	152,279	36,766	195,942	156,619	107,518	52,325	45,070	44,761	
Kansas.....	298,273	245,932	200,233	41,193	186,102	143,751	104,131	112,171	102,181	96,102	
SOUTH ATLANTIC:											
Delaware.....	22,222	15,842	12,627	36,383	21,626	15,210	12,586	596	632	41	
Maryland.....	118,397	84,801	66,323		115,154	81,686	63,635	3,243	3,115	2,688	
District of Columbia.....	70,751	46,603	31,332	25,762	70,751	46,603	31,332	25,893	19,684	16,578	
Virginia.....	119,597	76,652	55,541		93,704	56,968	38,963				
West Virginia.....	99,530	80,251	62,144	22,801	66,021	55,033	46,709	33,509	25,218	15,435	
North Carolina.....	91,928	65,152	37,104	17,036	61,551	41,177	22,379	30,377	23,975	14,725	
South Carolina.....	43,716	33,239	20,911	10,753	31,835	24,871	15,393	11,887	8,368	5,518	
Georgia.....	124,479	96,436	62,260	25,761	99,654	78,864	52,568	24,825	17,572	9,692	
Florida.....	49,011	32,426	17,522	8,269	44,408	27,899	12,706	4,603	4,527	4,816	
EAST SOUTH CENTRAL:											
Kentucky.....	162,843	130,751	93,996	46,949	121,324	100,174	75,370	41,519	30,577	18,626	
Tennessee.....	140,669	104,353	71,130	36,392	96,357	78,717	60,357	44,312	25,636	10,773	
Alabama.....	76,693	56,292	40,481	14,170	53,000	44,144	32,473	23,693	12,148	8,008	
Mississippi.....	56,648	45,896	37,627	15,340	38,955	38,259	29,091	17,693	7,637	8,536	
WEST SOUTH CENTRAL:											
Arkansas.....	87,872	68,303	49,576	16,928	56,072	45,743	32,288	31,800	22,560	17,288	
Louisiana.....	63,890	46,602	35,692	17,543	57,869	43,906	33,448	6,021	2,696	2,244	
Oklahoma.....	176,835	116,217	68,125	15,732	105,072	65,215	36,758	71,763	51,002	31,367	
Texas.....	411,407	311,980	188,862	64,736	285,916	232,158	137,252	125,491	79,822	51,610	
MOUNTAIN:											
Montana.....	51,409	35,537	17,168	5,451	45,067	31,188	14,699	6,342	4,349	2,469	
Idaho.....	37,204	29,454	16,394	3,886	30,126	23,475	13,743	7,078	5,979	2,651	
Wyoming.....	15,774	9,946	6,699	7,258	12,624	7,471	5,331	3,150	2,475	1,368	
Utah.....	46,621	34,064	30,435		44,087	32,018	29,825	2,534	2,046	610	
Colorado.....	114,364	90,397	65,908	24,533	107,160	85,886	62,861	7,204	4,511	3,047	
New Mexico.....	15,314	10,346	6,653	2,510	13,124	9,047	5,496	2,190	1,299	1,157	
Arizona.....	18,225	11,224	6,203	3,264	17,394	10,128	5,285	831	1,096	918	
Nevada.....	8,716	5,684	4,601	1,165	8,311	5,295	4,099	405	389	502	
PACIFIC:											
Washington.....	188,407	150,016	98,846	31,447	162,754	134,040	86,439	25,653	15,976	12,407	
Oregon.....	125,660	99,713	49,629	21,190	103,623	84,923	37,171	22,037	14,790	12,458	
California.....	577,055	434,002	237,672	106,650	554,727	420,601	228,762	22,328	13,401	8,910	

Table 8

ALL SYSTEMS AND LINES—PER CENT OF INCREASE¹ IN—

DIVISION AND STATE.	Miles of wire.									Number of telephones.								
	Total.			On systems reporting annual incomes of \$5,000 or more.			On systems reporting annual incomes of less than \$5,000.			Total.			On systems reporting annual incomes of \$5,000 or more.			On systems reporting annual incomes of less than \$5,000.		
	1907-1917	1912-1917	1907-1912	1907-1917	1912-1917	1907-1912	1907-1917	1912-1917	1907-1912	1907-1917	1912-1917	1907-1912	1907-1917	1912-1917	1907-1912	1907-1917	1912-1917	1907-1912
UNITED STATES.....	121.8	42.4	55.8	129.0	43.5	59.5	41.9	24.4	14.1	91.5	34.2	42.7	103.1	36.0	49.3	45.5	25.6	15.8
GEOGRAPHIC DIVISIONS:																		
New England.....	138.9	54.2	54.8	142.9	55.3	56.4	-23.6	-16.8	-8.2	111.1	40.4	52.4	122.8	42.7	56.1	-16.1	-14.2	-2.2
Middle Atlantic.....	140.1	45.7	64.7	142.7	46.4	65.8	29.9	6.4	22.0	95.1	37.1	42.2	99.8	39.2	43.5	30.7	4.7	24.9
East North Central.....	115.8	53.6	40.4	125.9	56.2	44.6	13.2	15.1	-1.7	84.5	32.8	38.9	101.8	35.9	48.5	17.4	15.6	1.6
West North Central.....	92.5	34.2	43.5	107.3	36.4	52.0	27.7	20.4	6.1	69.4	30.7	29.6	95.6	35.2	44.6	27.9	21.0	5.7
South Atlantic.....	98.3	54.7	28.1	103.3	58.3	28.5	50.7	20.5	25.0	102.2	39.2	45.3	104.1	41.2	44.6	94.2	30.9	48.3
East South Central.....	54.8	13.2	36.8	48.5	9.6	35.6	133.0	54.0	51.3	79.6	29.5	38.7	56.9	18.5	32.4	176.9	67.4	65.4
West South Central.....	139.2	45.7	64.2	143.5	46.3	66.4	111.4	41.6	49.3	116.2	36.2	58.7	110.6	30.5	61.4	129.3	50.6	52.2
Mountain.....	99.0	29.9	53.2	99.7	30.0	53.6	87.3	28.0	46.3	99.7	35.7	47.1	96.6	35.9	44.7	133.7	34.3	74.1
Pacific.....	204.1	20.4	152.5	209.5	19.4	159.2	98.5	64.4	20.7	130.8	30.3	77.1	133.0	28.4	81.5	107.3	58.5	30.8
NEW ENGLAND:																		
Maine.....	88.1	24.9	50.6	95.5	27.6	53.2	6.8	-12.7	22.3	66.0	28.0	29.7	78.1	34.7	32.2	8.9	-7.4	17.6
New Hampshire.....	123.8	45.8	53.5	142.5	48.7	63.1	-38.9	-13.0	-29.8	81.6	31.3	38.4	103.5	37.4	48.1	-34.5	-24.4	-13.3
Vermont.....	84.9	23.0	50.4	110.1	27.1	65.3	-18.2	-8.2	-10.8	55.6	19.5	30.2	83.6	28.9	42.4	-15.6	-14.9	-0.8
Massachusetts.....	153.3	56.7	61.6	154.3	57.0	61.9	-64.1	-61.3	-2.8	127.0	44.0	57.6	129.0	44.4	58.5	-63.2	-46.0	-31.8
Rhode Island.....	125.8	56.5	44.2	127.0	56.5	45.0	.....	.....	.....	168.6	55.4	72.9	170.5	55.4	74.1	.....	.....	.....
Connecticut.....	142.1	67.7	44.4	143.4	67.8	45.0	-88.1	-18.3	-83.4	134.2	42.9	63.9	137.0	42.8	65.9	-54.4	64.2	-72.2
MIDDLE ATLANTIC:																		
New York.....	154.9	48.9	71.2	157.8	49.3	72.6	10.9	12.7	-1.6	94.8	37.6	41.6	101.3	39.1	44.7	7.6	8.3	-0.7
New Jersey.....	195.9	55.4	90.5	197.6	55.6	91.3	-2.6	0.7	-3.2	117.5	37.1	58.7	119.6	37.9	59.3	18.9	-9.0	30.6
Pennsylvania.....	100.6	36.3	47.1	102.3	37.4	47.2	49.9	2.9	45.7	89.8	36.5	39.0	92.0	39.9	37.3	62.9	2.4	59.2
EAST NORTH CENTRAL:																		
Ohio.....	93.4	64.2	17.7	98.4	66.7	19.0	6.0	10.9	-4.4	70.6	34.0	27.4	79.2	35.4	31.4	12.1	12.4	-0.2
Indiana.....	76.1	39.7	26.0	88.6	42.3	32.6	0.4	16.2	-13.7	58.6	29.4	22.5	81.2	33.8	35.4	5.9	14.7	-7.7
Illinois.....	159.9	51.8	71.1	178.2	54.1	80.6	-10.0	7.3	-16.1	98.8	32.7	44.5	119.3	35.3	62.1	-4.9	14.6	-17.0
Michigan.....	116.9	47.3	47.2	119.4	48.7	47.5	73.3	21.9	42.2	106.9	29.6	59.7	112.1	31.9	60.7	76.4	14.9	53.4
Wisconsin.....	112.6	65.4	28.6	121.8	72.0	28.9	57.2	24.3	26.5	119.8	39.6	57.5	141.7	45.6	65.9	66.9	21.8	36.9
WEST NORTH CENTRAL:																		
Minnesota.....	173.1	62.0	68.5	187.1	64.8	74.2	65.6	32.8	24.7	138.0	49.9	58.8	159.0	56.5	65.5	80.4	28.5	40.4
Iowa.....	80.2	29.0	39.7	105.2	31.3	56.3	7.7	17.9	-8.7	47.2	28.7	14.4	70.7	32.0	29.3	16.6	22.8	-5.0
Missouri.....	74.7	28.0	36.5	83.5	28.9	42.4	22.6	20.4	1.8	63.6	26.5	29.3	89.4	28.0	48.0	21.9	22.8	-0.8
North Dakota.....	71.4	38.9	23.4	53.5	31.4	16.8	148.6	63.9	51.6	121.0	47.0	50.3	128.5	44.6	58.0	109.3	51.3	38.3
South Dakota.....	55.6	41.0	10.4	54.6	52.8	1.2	58.9	14.4	38.9	83.8	35.0	36.0	109.5	48.2	41.4	49.0	15.6	28.9
Nebraska.....	74.1	14.1	52.6	88.5	14.0	65.3	8.1	14.8	-5.8	63.0	23.1	32.4	82.2	25.1	45.7	16.9	16.1	0.7
Kansas.....	67.0	25.1	33.4	84.0	29.8	41.8	22.7	9.8	11.8	49.0	21.3	22.8	78.7	29.5	38.0	16.7	9.8	6.3
SOUTH ATLANTIC:																		
Delaware.....	111.3	54.6	36.7	109.4	55.0	35.0	.....	19.8	.....	76.0	40.3	25.5	71.8	42.2	20.8	.....	-5.7	.....
Maryland.....	89.5	55.0	22.2	90.7	56.1	22.1	-1.0	-23.2	28.9	78.5	39.6	27.9	81.0	41.0	28.4	20.6	4.1	15.9
District of Columbia.....	80.9	28.3	41.0	80.9	28.3	41.0	.....	.....	.....	125.8	51.8	48.7	125.8	51.8	48.7	.....	.....	.....
Virginia.....	150.1	68.5	48.4	170.8	74.9	51.8	37.1	21.0	13.3	115.3	56.0	38.0	140.5	64.5	46.2	56.2	31.5	18.7
West Virginia.....	79.7	58.8	13.1	81.7	64.9	10.2	67.5	27.7	31.2	60.2	24.0	29.1	41.3	20.0	17.8	117.1	32.9	63.4
North Carolina.....	78.2	36.0	31.1	93.7	40.1	38.3	38.9	23.2	12.8	147.8	41.1	75.6	175.0	49.5	84.0	103.3	26.7	62.8
South Carolina.....	95.0	32.8	46.8	115.0	36.9	57.0	16.8	9.4	6.7	109.0	31.5	59.0	103.8	28.0	61.6	115.3	42.0	51.6
Georgia.....	67.2	52.1	9.9	62.6	55.2	4.7	145.7	24.7	97.1	99.9	29.1	54.9	89.6	26.4	50.0	156.1	41.3	81.3
Florida.....	299.0	143.1	64.2	369.7	157.4	82.5	-1.6	14.2	-13.8	179.7	51.1	85.0	249.5	59.2	119.6	-4.4	1.7	-6.0
EAST SOUTH CENTRAL:																		
Kentucky.....	47.0	9.5	34.2	44.0	7.6	33.8	82.6	31.2	39.2	73.2	24.5	39.1	161.0	21.1	32.9	122.9	35.8	64.2
Tennessee.....	82.0	28.2	42.1	68.8	24.8	35.2	283.9	56.5	145.3	97.8	34.8	46.7	59.6	22.4	30.4	311.3	72.8	138.0
Alabama.....	53.8	35.2	13.8	47.9	32.1	12.0	133.4	68.9	38.2	89.4	36.2	39.0	63.2	20.1	35.9	195.9	95.0	51.7
Mississippi.....	26.3	-21.1	60.1	23.0	-27.1	68.8	56.2	96.4	-20.5	50.6	23.4	22.0	33.9	1.8	31.5	107.3	131.7	-10.5
WEST SOUTH CENTRAL:																		
Arkansas.....	71.9	20.6	42.5	76.1	19.0	48.0	53.4	29.9	18.1	77.2	28.6	37.8	73.7	22.6	41.7	83.9	41.0	30.5
Louisiana.....	94.3	41.8	37.1	93.0	40.3	37.6	139.3	97.1	21.4	79.0	37.1	30.6	73.0	31.8	31.3	168.3	123.3	20.1
Oklahoma.....	219.3	58.4	101.5	244.4	65.7	107.9	129.6	28.4	78.9	159.6	52.2	70.6	185.8	61.1	77.4	128.8	40.7	62.6
Texas.....	144.9	47.4	66.1	148.5	47.4	68.6	120.0	47.9	48.7	117.8	31.9	65.2	108.3	23.2	69.1	143.2	57.2	54.7
MOUNTAIN:																		
Montana.....	233.5	74.5	91.1	264.1	81.8	100.3	84.4	25.9	46.4	199.4	44.7	107.0	206.6	44.5	12.2	156.9	45.8	76.1
Idaho.....	118.8	40.4	55.8	117.8	41.2	54.2	128.3	33.1	71.6	126.9	26.3	79.7	119.2	28.3	70.8	167.0	18.4	125.5
Wyoming.....	159.2	49.4	73.4	185.0	59.5	78.7	83.7	16.1	53.2	135.5	58.6	48.5	136.8	69.0	40.1	130.3	27.3	80.9
Colorado.....	79.9	19.2	50.9	79.4	18.5	51.3	95.4	42.8	36.8	73.5	26.5	37.2	70.5	24.8	36.6	136.4	59.7	48.0
New Mexico.....	155.6	42.1	79.8	173.1	36.5	100.0	77.9	97.2	-9.8	130.2	48.0	55.5	138.8	45.1	64.6	89.3	68.6	12.3
Arizona.....	283.9	111.9	81.2	325.2	122.8	90.9	-8.9	-19.0	12.5	193.8	62.4	80.9	229.1	71.7	91.6	-9.5	-24.2	19.4
Utah.....	49.9	7.3	39.8	48.4	7.8	37.6	179.2	-13.1	221.2	53.2	36.9	11.9	47.8	37.7	7.4	315.4	23.8	235.4
Nevada.....	39.2	42.8	-2.5	45.0	46.5	-1.1	-9.8	5.8	-14.8	89.4	53.3	23.5	102.8	57.0	29.2	-19.3	4.1	-22.5
PACIFIC:																		
Washington.....	105.8	-11.8	133.3	106.8	-14.2	141.1	91.4	57.2	21.7	90.6	25.6	51.8	88.3	21.4	55.1	106.8	60.6	28.8
Oregon.....	213.7	1.0	210.6	237.0	-2.4	245.2	81.0	60.3	12.9	153.2	26.0	100.9	178.8	22.0	128.5	76.9	49.0	18.7
California.....	240.3	35.8	150.5	243.4	35.3	153.8	122.0	74.6	27.1	142.8	33.0	82.6	142.5	31.9	83.8	150.6	66.6	50.4

¹ A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

Table 9

ALL SYSTEMS AND LINES--PER CENT DISTRIBUTION FOR--

DIVISION AND STATE.	Miles of wire.									Number of telephones.								
	Total.			Systems reporting annual incomes of \$5,000 or more.			Systems reporting annual incomes of less than \$5,000.			Total.			Systems reporting annual incomes of \$5,000 or more.			Systems reporting annual incomes of less than \$5,000.		
	1917	1912	1907	1917	1912	1907	1917	1912	1907	1917	1912	1907	1917	1912	1907	1917	1912	1907
UNITED STATES.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
GEOGRAPHIC DIVISIONS:																		
New England.....	8.3	7.6	7.7	8.7	8.0	8.2	1.2	1.8	2.2	7.5	7.2	6.7	8.6	8.2	7.8	1.2	1.8	2.1
Middle Atlantic.....	25.5	24.9	23.5	26.5	26.0	25.0	6.0	7.0	6.5	20.9	20.4	20.5	23.4	22.9	23.8	6.3	7.6	7.0
East North Central.....	24.8	22.9	25.4	24.9	22.9	25.3	22.0	23.7	27.6	27.0	27.2	28.0	27.6	27.5	27.7	23.4	25.5	29.0
West North Central.....	13.6	14.5	15.7	12.6	13.3	14.0	31.6	32.7	35.1	18.1	18.6	20.4	15.1	15.1	15.6	35.2	36.5	40.0
South Atlantic.....	6.0	5.5	6.7	5.9	5.3	6.6	8.3	8.6	7.8	6.3	6.1	6.0	6.1	5.8	6.0	7.7	7.3	5.7
East South Central.....	3.8	4.8	5.5	3.6	4.7	5.5	8.1	6.6	5.0	3.7	3.9	4.0	3.1	3.6	4.0	7.2	5.4	3.8
West South Central.....	6.6	6.5	6.2	6.2	6.1	5.8	14.8	13.0	9.9	6.3	6.2	5.6	5.1	5.3	4.9	13.3	11.1	8.5
Mountain.....	2.5	2.8	2.8	2.5	2.8	2.9	2.7	2.6	2.1	2.6	2.6	2.5	2.8	2.8	2.9	1.7	1.6	1.0
Pacific.....	8.9	10.5	6.5	9.1	10.9	6.7	5.3	4.0	3.8	7.6	7.8	6.3	8.2	8.7	7.2	4.0	3.1	2.8
NEW ENGLAND:																		
Maine.....	0.6	0.7	0.7	0.6	0.7	0.7	0.5	0.8	0.7	0.8	0.8	0.9	0.8	0.8	0.9	0.6	0.8	0.8
New Hampshire.....	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.3	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.2	0.3	0.4
Vermont.....	0.2	0.3	0.3	0.2	0.3	0.2	0.4	0.5	0.7	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.6	0.7
Massachusetts.....	4.7	4.3	4.1	5.0	4.5	4.5	0.1	0.2	0.2	4.0	3.8	3.4	4.8	4.5	4.2	(1)	0.1	0.2
Rhode Island.....	0.6	0.5	0.5	0.6	0.5	0.6	(1)	(1)	(1)	0.6	0.5	0.4	0.6	0.6	0.5	(1)	(1)	(1)
Connecticut.....	1.8	1.5	1.7	1.9	1.6	1.8	(1)	(1)	0.1	1.3	1.2	1.0	1.5	1.4	1.3	(1)	(1)	(1)
MIDDLE ATLANTIC:																		
New York.....	14.4	13.8	12.5	15.1	14.5	13.4	2.3	2.6	3.0	11.4	11.1	11.2	12.9	12.6	13.0	2.9	3.4	3.9
New Jersey.....	3.5	3.2	2.6	3.6	3.4	2.8	0.2	0.2	0.3	2.2	2.1	1.9	2.5	2.5	2.3	0.2	0.2	0.2
Pennsylvania.....	7.6	7.9	8.4	7.8	8.1	8.8	3.5	4.2	3.3	7.3	7.2	7.4	8.0	7.8	8.5	3.2	4.0	2.9
EAST NORTH CENTRAL:																		
Ohio.....	6.6	5.7	7.6	6.8	5.8	7.8	3.8	4.2	5.0	7.2	7.2	8.1	7.8	7.7	8.8	4.0	4.5	5.3
Indiana.....	3.2	3.3	4.1	3.1	3.2	3.8	4.9	5.3	7.0	3.9	4.1	4.7	3.7	3.7	4.1	5.2	5.7	7.2
Illinois.....	8.9	8.3	7.6	9.1	8.5	7.5	5.7	6.6	8.9	9.2	9.2	9.1	9.6	9.6	8.9	6.7	7.3	10.2
Michigan.....	3.7	3.6	3.8	3.8	3.6	3.9	3.1	3.1	2.5	3.7	3.8	3.4	3.8	3.9	3.6	3.1	3.3	2.5
Wisconsin.....	2.3	2.0	2.4	2.2	1.8	2.2	4.5	4.5	4.1	3.0	2.9	2.6	2.7	2.5	2.3	4.4	4.5	3.8
WEST NORTH CENTRAL:																		
Minnesota.....	3.7	3.2	3.0	3.6	3.1	2.9	4.8	4.5	4.1	3.5	3.1	2.8	3.3	2.8	2.6	4.7	4.6	3.8
Iowa.....	2.2	2.5	2.8	2.0	2.2	2.2	6.5	6.9	8.6	4.2	4.4	5.4	3.2	3.3	3.8	9.6	9.8	11.9
Missouri.....	3.9	4.3	4.9	3.7	4.1	4.6	7.4	7.7	8.6	4.4	4.6	5.1	3.7	3.9	3.9	8.3	8.4	9.9
North Dakota.....	0.4	0.4	0.5	0.3	0.3	0.4	1.9	1.4	1.1	0.6	0.6	0.6	0.5	0.4	0.4	1.5	1.3	1.1
South Dakota.....	0.4	0.4	0.5	0.3	0.3	0.4	1.7	1.8	1.5	0.8	0.8	0.8	0.6	0.5	0.6	1.7	1.9	1.7
Nebraska.....	1.5	1.9	2.0	1.5	1.8	1.8	3.3	3.6	4.3	2.1	2.3	2.5	2.0	2.1	2.2	3.0	3.2	3.7
Kansas.....	1.5	1.8	2.0	1.3	1.4	1.6	6.0	6.8	6.9	2.5	2.8	3.3	1.9	2.0	2.1	6.4	7.3	7.9
SOUTH ATLANTIC:																		
Delaware.....	0.3	0.2	0.3	0.3	0.2	0.3	(1)	(1)	(1)	0.2	0.2	0.2	0.2	0.2	0.3	(1)	(1)	(1)
Maryland.....	1.2	1.1	1.4	1.3	1.2	1.5	0.2	0.3	0.2	1.0	1.0	1.1	1.2	1.1	1.3	0.2	0.2	0.2
District of Columbia.....	0.6	0.6	0.7	0.6	0.7	0.8	(1)	(1)	(1)	0.6	0.5	0.5	0.7	0.6	0.6	(1)	(1)	(1)
Virginia.....	0.9	0.8	0.8	0.9	0.7	0.8	1.5	1.6	1.6	1.0	0.9	0.9	0.9	0.8	0.8	1.5	1.4	1.4
West Virginia.....	0.6	0.6	0.8	0.6	0.5	0.7	1.5	1.5	1.3	0.8	0.9	1.0	0.7	0.8	1.0	1.9	1.8	1.3
North Carolina.....	0.5	0.5	0.6	0.4	0.4	0.5	2.1	2.2	2.2	0.8	0.7	0.6	0.6	0.6	0.4	1.7	1.7	1.2
South Carolina.....	0.3	0.4	0.4	0.3	0.3	0.3	0.8	0.9	1.0	0.4	0.4	0.3	0.3	0.3	0.3	0.7	0.6	0.4
Georgia.....	1.1	1.0	1.4	1.0	1.0	1.5	1.7	1.7	1.0	1.1	1.1	1.0	1.0	1.1	1.1	1.4	1.3	0.8
Florida.....	0.5	0.3	0.3	0.5	0.3	0.2	0.4	0.4	0.6	0.4	0.4	0.3	0.4	0.4	0.2	0.3	0.3	0.4
EAST SOUTH CENTRAL:																		
Kentucky.....	1.3	1.7	2.0	1.3	1.7	2.0	2.4	2.3	1.9	1.4	1.5	1.5	1.2	1.4	1.5	2.4	2.2	1.5
Tennessee.....	1.3	1.4	1.6	1.2	1.4	1.6	3.1	2.5	1.2	1.2	1.2	1.2	1.0	1.1	1.2	2.5	1.8	0.9
Alabama.....	0.7	0.8	1.0	0.7	0.7	1.0	1.4	1.0	1.8	0.6	0.6	0.7	0.5	0.6	0.7	1.3	0.9	0.7
Mississippi.....	0.5	0.9	0.9	0.4	0.9	0.9	1.2	0.7	1.1	0.5	0.5	0.6	0.4	0.5	0.6	1.0	0.5	0.7
WEST SOUTH CENTRAL:																		
Arkansas.....	0.6	0.7	0.8	0.5	0.6	0.7	1.8	1.7	1.7	0.7	0.8	0.8	0.6	0.6	0.7	1.8	1.6	1.4
Louisiana.....	0.7	0.7	0.8	0.7	0.7	0.8	0.5	0.3	0.3	0.5	0.5	0.6	0.6	0.6	0.7	0.3	0.2	0.2
Oklahoma.....	1.2	1.0	0.8	1.0	0.9	0.7	3.4	3.3	2.1	1.5	1.3	1.1	1.0	0.9	0.7	4.1	3.6	2.6
Texas.....	4.2	4.1	3.8	3.9	3.8	3.5	9.1	7.6	5.8	3.5	3.6	3.1	2.9	3.2	2.8	7.1	5.7	4.3
MOUNTAIN:																		
Montana.....	0.3	0.3	0.2	0.3	0.2	0.2	0.6	0.6	0.4	0.4	0.4	0.3	0.5	0.4	0.3	0.4	0.3	0.2
Idaho.....	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.1
Wyoming.....	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1
Colorado.....	1.1	1.3	1.3	1.1	1.3	1.4	0.7	0.6	0.5	1.0	1.0	1.1	1.1	1.2	1.3	0.4	0.3	0.3
New Mexico.....	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Arizona.....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	(1)	0.1	0.1
Utah.....	0.4	0.6	0.6	0.4	0.6	0.6	0.2	0.2	0.1	0.4	0.4	0.5	0.4	0.4	0.6	0.1	0.1	(1)
Nevada.....	(1)	(1)	0.1	(1)	(1)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	(1)	(1)	(1)
PACIFIC:																		
Washington.....	1.5	2.4	1.6	1.5	2.5	1.6	1.7	1.4	1.3	1.6	1.7	1.6	1.6	1.8	1.8	1.5	1.1	1.0
Oregon.....	1.0	1.3	0.7	0.9	1.4	0.6	1.5	1.2	1.2	1.1	1.1	0.8	1.0	1.2	0.7	1.2	1.0	1.0
California.....	6.4	6.7	4.2	6.7	7.1	4.4	2.0	1.4	1.3	4.9	5.0	3.9	5.6	5.7	4.7	1.3	1.0	0.7

1 Less than one-tenth of 1 per cent.

The American Telephone & Telegraph Co. (Bell Telephone System) reported to the Bureau of the Census the exact amount of telephone wire mileage which it had in each state in 1917, 1912, 1907, and 1902. The non-Bell companies reported their wire mileage in 1917 as if it were all within the boundaries of the state in which the principal business was located. Very few independent companies conducted business in more than one state and it was found that the very slight difference in accuracy attained by securing exact information from those independent systems regarding the amount of their equipment located in each state did not justify the expense involved.

It was impossible to obtain the segregated figures for 1902 for Connecticut and Rhode Island, for Delaware, Maryland, and the District of Columbia, and for Utah and Wyoming. Consequently, the combined figures are presented for each of these groups of states, as was done at prior censuses.

As shown by Table 6, New York reported the largest wire mileage of all of the states, 14.4 per cent of the total miles of wire in the country being located in this state alone in 1917. Illinois, Pennsylvania, Ohio, and California, in order named, constitute the other leading states in this respect. More than one-quarter of the total wire mileage of the country in 1917 was reported by the three Middle Atlantic states and practically the same proportion was reported by the five East North Central states. Less than one-third (31.7 per cent) was reported by the states west of the Mississippi.

The systems and lines having annual incomes of less than \$5,000 are relatively much more important in the West than in the East. This is shown not only by the number of such systems and lines (as already noted in connection with Table 5) but even more by their wire mileage. More than one-half (54.4 per cent) of the miles of wire reported by these small systems for the United States is located west of the Mississippi. The four leading states in this respect,

Texas, Missouri, Iowa, and Kansas, are all in this region.

The largest per cent of increase in wire mileage shown for the decade 1907-1917 was for Florida, there being almost four times as many miles of telephone wire in that state in 1917 as there were 10 years previous. Arizona, California, Montana, Oklahoma, and Oregon also reported increases for the decade of more than 200 per cent each. In no state did either the total wire mileage or the wire mileage of the systems reporting annual incomes of \$5,000 or more show a decrease for the decade. In 10 states, however, the miles of wire reported by the small systems and lines decreased during the decade while in 12 states the percentage of increase in the wire mileage reported by the small systems was larger than the percentage shown by the systems having annual incomes of \$5,000 or more.

The number of telephones, like the mileage of telephone wire, bears a close relation to the density of population. The 4 states having the largest number of telephones, New York, Illinois, Pennsylvania, and Ohio, are also the 4 states that have the largest population, although in the latter respect Pennsylvania ranks ahead of Illinois. Table 8 shows that the greatest percentage of increase in the number of telephones for any state for the decade 1907-1917 was shown for Montana, 199.4 per cent, while Arizona was a close second, showing an increase of 193.8 per cent. Florida, Rhode Island, Oklahoma, and Oregon, also show increases for the decade of more than 150 per cent. In each of these states, as well as in all but the District of Columbia and 11 other states, the percentage of increase for the first half of the decade exceeded that reported for the latter half. The largest percentages of increases for the period from 1912 to 1917 and from 1907 to 1912 both in miles of wire and in number of telephones are shown for the states having small population. The percentages of increase on the whole were larger during the earlier than during the later half of the period.

CHAPTER III.—EQUIPMENT AND TRAFFIC.

Nature of equipment.—The miles of wire, of pole line, and of phantom circuits, the number of public and private-branch exchanges, and the number of telephone instruments are the only features of telephone equipment for which statistics were collected at the census of 1917. The same statistics were collected in 1912 with the exception of the miles of phantom circuits. Statistics as to other classes of equipment, such as the number and capacity of switchboards, the number of drops or jacks, the number and capacity of engines and dynamos, batteries, miles of duct, number and cost of poles purchased, etc., were collected at the censuses of 1902 and 1907. In order to simplify the schedule, however, these features were abandoned at the census of 1912.

Table 10 presents for 1917, 1912, and 1907 the data regarding equipment for which comparative figures are obtainable, showing such data separately for systems reporting annual incomes of \$5,000 or more and those reporting incomes of less than \$5,000.

Table 10	1917	1912	1907
All systems and lines:			
Miles of wire.....	28,827,188	20,248,326	12,999,364
Number of telephones.....	11,716,520	8,729,592	6,118,578
Systems reporting annual incomes of \$5,000 and over:			
Miles of pole line.....	780,200	671,686	553,752
Miles of wire.....	27,298,026	19,019,391	11,921,960
Miles of phantom circuit.....	315,037	(¹)	(¹)
Number of public exchanges.....	12,294	11,515	10,613
Number of private-branch exchanges.....	80,914	52,651	28,276
Number of telephones.....	9,953,710	7,326,748	4,906,693
Systems reporting annual incomes of less than \$5,000:			
Miles of wire.....	1,529,162	1,228,935	1,077,404
Number of telephones.....	1,762,810	1,402,844	1,211,885

¹ Not reported.

The statistics in the above table, for miles of wire and number of telephones, are the only data regarding equipment which can be shown both for the large systems (those reporting annual incomes of \$5,000 or more) and for the small systems. The latter were not required to make a report regarding other items of equipment, with the exception that each of the companies, lines, or systems reporting an annual income of less than \$5,000 was asked whether or not it operated a telephone exchange; affirmative answers were received from 8,881 of these in 1917. Some of these small systems, moreover, operated more than one exchange, so that the number shown is slightly less than the actual number of telephone exchanges operated by these small telephone systems. It is unlikely that these small systems have any private-branch exchanges, so that the figures given in Table 10, as reported by the larger systems, represent practically all, if not all, of the private-branch exchanges in the United States.

Miles of wire.—In the early development of the wire plant, telephone companies, following the practice established by telegraph companies, used iron wire supported by wooden poles. The number of wires and poles required by the rapid development of telephony, however, soon became a menace and a nuisance, especially in cities, and the old system is being rapidly abandoned. The wires are now in many cases inclosed in cables, which to a large extent are laid in underground conduits. In fact, practically all of the wire underground, as well as a large proportion of that overhead, is now carried in cables. This method of carrying a number of wires to some central or convenient point for distribution is very general in the urban districts. No data for 1912 or 1917 were secured as to the length of cables, underground subways, or conduits, although the number of miles of single wire therein was reported.

The schedule of 1917 and 1912 called for the miles of single wire on exchange and toll circuits, overhead and underground, respectively. The statistics are summarized in Table 11.

Table 11	ALL SYSTEMS AND LINES—MILES OF WIRE.	
	1917	1912
Total.....	28,827,188	20,248,326
Overhead.....	13,978,008	11,063,338
Underground.....	14,849,180	9,164,988
On exchange circuits.....	25,252,276	17,565,110
Overhead.....	11,393,178	8,876,594
Underground.....	13,859,098	8,688,516
On toll circuits.....	3,574,912	2,683,216
Overhead.....	2,584,830	2,206,744
Underground.....	990,082	476,472

¹ Includes 1,529,162 miles of wire in 1917, and 1,228,935 miles of wire in 1912 operated by systems reporting annual incomes of less than \$5,000, for which no segregation as to overhead and underground was made.

The 28,827,188 miles of wire reported for 1917 was the quantity of single wire in operation or ready for operation at the end of the census year. If several wires were on one line of poles or in one conduit or cable, the length of each wire was included in the total as a separate item. A number of organizations, especially among the small systems or lines, reported that they had no record of the miles of wire. In such cases it was necessary to secure estimates. These estimates were checked with the actual miles of wire per telephone reported by other companies in the same region, and when it appeared necessary the reports were returned for revision.

Of the total miles of wire reported 12.4 per cent in 1917 and 13.2 per cent in 1912 was on the long-distance or toll circuits, the remainder being considered as being entirely on the local or exchange circuits. All of the

wire reported by the lines or systems having annual incomes of less than \$5,000 was classed as wire on exchange circuits. These systems were not required to report how much of their wire was on exchange circuits and how much was on toll circuits, but it is thought that comparatively little of the wire reported by these small systems was used for long-distance purposes.

The increase in the percentage of wire underground and the corresponding decrease in the proportion of overhead construction are shown in Table 12, which gives for all systems and lines the number of miles of wire classed as overhead or underground, with the per cent of total for each class.

CENSUS YEAR.	ALL SYSTEMS AND LINES—MILES OF WIRE.				
	Total.	Overhead. ¹	Underground.	Per cent of total.	
				Overhead.	Underground.
1917.....	28,827,188	13,978,008	14,849,180	48.5	51.5
1912.....	20,248,326	11,083,338	9,164,988	54.7	45.3
1907.....	12,999,364	8,009,332	4,990,032	61.6	38.4
1902.....	4,900,451	3,200,409	1,700,042	65.3	34.7

¹ Includes total miles of wire reported by systems having annual incomes of less than \$5,000 in 1917 and 1912, no segregation having been made, and also all wire reported by farmer or rural lines in 1907 and 1902; exclusive of 2,835 miles in Canada in 1917, 1,565 miles in 1912, and 5 miles in 1907.

In 1902 overhead wire represented almost two-thirds of the total wire mileage reported. Although the mileage of overhead wire has shown a substantial actual increase from census to census since 1902, this increase has been at a so much less rapid rate than the increase in underground wire that the proportion which the overhead wire constituted of the total has declined with each succeeding census until in 1917 it represented less than one-half of the total wire reported.

Companies operating in two or more states considered that it would work a hardship if they were required to furnish a segregation of the miles of overhead and underground wire, the miles of pole line, or the miles of wire on exchange or toll circuits for each state, therefore, no statistics on these subjects are given for separate states or cities.

Number of telephones.—The term "telephone" as used in this report refers to the complete instrument or set consisting of a transmitter and a receiver. The report covers all telephones wired for service December 31, 1917, that were connected through exchanges or switchboards and those on farmer or rural lines, whether they were or were not connected with switch-

boards. It does not cover those telephones used exclusively within hotels, mercantile or other commercial or private buildings, unless they were connected with outside or public exchanges. The number of telephones is generally accepted as the most satisfactory unit of measurement to determine the importance of the industry. The number wired for service is almost invariably a matter of record or is so well known that it can be readily furnished. In few cases did the Bureau of the Census find it necessary to secure an estimate of the number of telephones on any system or line.

There were 54,319 telephones reported at the census of 1880. This had increased to 11,716,520 on December 31, 1917. There are, in addition, a considerable number of telephones on the wires of railway companies and in mercantile, manufacturing, and other establishments that are not included in the census. The total shown, therefore, is slightly less than the actual number wired for use. (For number of telephones see Table 7.)

Table 13 gives, for 1917, 1912, 1907, and 1902, by geographic divisions and states, the number of telephones per 1,000 population. These figures are based on the population as estimated by the Census Bureau, as shown in the table, and on the number of telephones shown in Table 7.

While the actual number of telephones has shown a rapid absolute increase during the 15-year period 1902–1917, the increase in their density—in the ratio between population and telephones—has also been very pronounced. There were, in 1902, only 30 telephones to each 1,000 of the population; in 1917 there were 113 telephones to each 1,000 population. Iowa has shown the largest number of telephones per 1,000 population at each of the last two censuses; in 1907 Washington was the leading state in this respect, and in 1902, California.

The greatest density of telephones is, on the whole, found in the Middle West, two agricultural states, Iowa and Nebraska, ranking first and second in this respect in 1917. Excluding California and the District of Columbia, the eight leading states, on the basis of number of telephones per 1,000 population, are either in the East North Central or West North Central states. The Southern states, with their large proportion of colored population, are far behind the rest of the country in density of telephones, and all of the Mountain states except Colorado show fewer telephones, per 1,000 population, in 1917, than does the United States as a whole.

Table 13

DIVISION AND STATE.	ALL SYSTEMS AND LINES—RELATION OF TELEPHONES TO POPULATION.							
	Estimated population.				Telephones per 1,000 population. ¹			
	1917	1912	1907	1902	1917-	1912	1907	1902
UNITED STATES.....	103,635,306	95,545,336	85,532,761	78,576,436	113	91	72	30
GEOGRAPHIC DIVISIONS:								
New England.....	7,253,926	6,767,513	6,111,093	5,769,477	121	92	67	29
Middle Atlantic.....	22,134,418	20,179,371	17,667,920	16,008,719	110	88	71	30
East North Central.....	19,904,005	18,757,149	17,663,394	16,462,313	159	127	97	45
West North Central.....	12,579,931	11,926,513	11,363,251	10,624,893	168	136	110	38
South Atlantic.....	13,473,354	12,586,562	11,574,988	10,770,414	55	42	32	14
East South Central.....	9,039,231	8,602,701	8,330,783	7,768,517	48	39	29	15
West South Central.....	10,428,575	9,288,200	8,037,775	6,883,018	71	58	43	17
Mountain.....	3,333,442	2,847,946	1,992,696	1,763,813	92	80	77	27
Pacific.....	5,488,424	4,589,381	2,790,861	2,525,272	162	149	138	63
NEW ENGLAND:								
Maine.....	777,340	753,085	717,832	700,072	113	92	74	20
New Hampshire.....	444,429	434,818	436,128	418,602	118	92	66	24
Vermont.....	364,946	358,710	351,495	345,885	131	112	88	35
Massachusetts.....	3,775,973	3,491,888	3,083,013	2,917,796	126	94	68	33
Rhode Island.....	625,865	568,114			103	73		
Connecticut.....	1,265,373	1,160,898	1,522,625	1,387,122	118	90	58	24
MIDDLE ATLANTIC:								
New York.....	10,460,182	9,526,146	8,386,673	7,533,011	128	102	82	33
New Jersey.....	3,014,194	2,683,309	2,248,332	1,969,821	84	69	52	25
Pennsylvania.....	8,660,042	7,969,916	7,032,915	6,505,887	99	79	64	29
EAST NORTH CENTRAL:								
Ohio.....	5,212,085	4,903,439	4,497,198	4,252,372	162	129	110	53
Indiana.....	2,835,492	2,742,117	2,743,305	2,581,575	162	129	106	53
Illinois.....	6,234,995	5,821,305	5,518,190	5,019,628	172	139	101	44
Michigan.....	3,094,266	2,897,207	2,611,790	2,480,764	140	116	80	38
Wisconsin.....	2,527,167	2,393,081	2,292,911	2,127,974	138	105	69	30
WEST NORTH CENTRAL:								
Minnesota.....	2,312,445	2,148,235	2,071,318	1,822,106	176	127	83	35
Iowa.....	2,219,604	2,223,189	2,201,331	2,301,427	220	171	151	60
Missouri.....	3,429,595	3,335,080	3,405,901	3,187,031	149	121	92	32
North Dakota.....	765,319	634,731	487,850	344,778	98	81	70	20
South Dakota.....	716,972	624,658	476,631	429,898	124	105	101	24
Nebraska.....	1,284,126	1,220,371	1,068,849	1,087,526	193	165	142	34
Kansas.....	1,851,870	1,740,249	1,651,331	1,452,217	161	141	121	28
SOUTH ATLANTIC:								
Maryland.....	1,373,673	1,319,343			86	64		
Delaware.....	215,160	206,255			103	77		
District of Columbia.....	369,282	342,776	1,798,652	1,693,019	192	136	61	21
Virginia.....	2,213,025	2,107,998	1,992,925	1,899,440	54	36	28	14
West Virginia.....	1,412,602	1,279,781	1,096,006	998,004	70	53	57	23
North Carolina.....	2,434,381	2,276,165	2,086,912	1,948,984	38	29	18	9
South Carolina.....	1,643,205	1,554,554	1,472,734	1,378,150	27	21	14	8
Georgia.....	2,895,841	2,696,961	2,481,617	2,298,713	43	36	25	11
Florida.....	916,185	802,729	646,142	554,104	53	40	27	15
EAST SOUTH CENTRAL:								
Kentucky.....	2,394,093	2,321,823	2,349,152	2,202,804	68	56	40	21
Tennessee.....	2,304,629	2,221,503	2,197,785	2,070,354	61	47	32	18
Alabama.....	2,363,939	2,207,283	2,049,407	1,891,755	32	26	20	7
Mississippi.....	1,976,570	1,852,092	1,734,439	1,603,604	29	25	22	10
WEST SOUTH CENTRAL:								
Arkansas.....	1,766,343	1,633,238	1,439,910	1,347,934	50	42	34	13
Louisiana.....	1,856,954	1,717,834	1,565,752	1,434,033	34	27	23	12
Oklahoma.....	2,289,855	1,850,987	1,414,177	897,748	77	63	48	18
Texas.....	4,515,423	4,086,141	3,617,936	3,203,303	91	76	52	20
MOUNTAIN:								
Montana.....	472,935	405,734	313,615	266,120	109	88	55	20
Idaho.....	445,176	362,229	213,028	176,416	84	81	77	22
Colorado.....	988,320	857,016	628,216	559,715	116	105	105	44
New Mexico.....	423,649	356,819	219,830	202,316	36	29	30	12
Arizona.....	263,788	222,563	147,214	129,869	69	50	42	25
Utah.....	443,866	394,953			105	86		
Wyoming.....	184,970	157,914	428,458	388,046	85	63	87	19
Nevada.....	110,738	90,718	42,335	41,331	79	62	110	28
PACIFIC:								
Washington.....	1,597,400	1,281,508	630,712	558,055	118	117	157	56
Oregon.....	861,992	730,736	484,938	429,380	146	136	102	49
California.....	3,029,032	2,577,137	1,675,211	1,537,837	190	168	142	69

¹ Computed from basic figures shown in Table 7.

Rural telephones.—There is no clear line of demarcation between urban and rural telephone systems. The statistics for the systems which had their principal offices in places with a population of 4,000 or more were given for the censuses of 1902, and 1907 as representing the urban districts, all other systems and lines being classed as rural. This classification, however, was unsatisfactory because many of the systems that had their principal offices in places of 4,000 inhabitants or more extended their lines into the sur-

rounding rural districts. By 1912 these extensions into the rural districts had become so great that it was believed the classification, if adopted, would be misleading. It was also found impracticable to endeavor to obtain separate statistics for different cities from companies that operated in two or more places of 4,000 population or over.

The larger telephone companies reported separately the number of telephones on their rural lines at the censuses of 1902 and 1907. This was combined with

the number reported by mutual systems and farmer or rural lines, the total being accepted as representing the rural telephones. This classification was abandoned as unsatisfactory at the census of 1912.

The only practicable segregation apparent was based on the size of the companies or systems. Of the 53,234 telephone systems and lines for which statistics are included in the present report, there were 51,034 that reported an annual income of less than \$5,000. The

statistics of wire mileage and of number of telephones for the two classes of companies, (a) those with an annual income of \$5,000 or more, and (b) those with an income of less than that amount, for 1917, 1912, and 1907, are given for each geographic division and state in Tables 6 and 7, respectively.

The statistics that were collected for 1917 for systems and lines having annual incomes of less than \$5,000 are presented, by states, in Table 14.

Table 14

SYSTEMS AND LINES HAVING ANNUAL INCOMES OF LESS THAN \$5,000: 1917.

STATE.	Number of systems or lines.	Miles of wire.	Number of systems reporting switch-boards.	Number of telephones.	Estimated number of messages or talks.	Gross receipts exclusive of assessments of mutual companies.	Assessments of mutual companies.	Employees.		Salaries and wages paid.	Total investment Dec. 31, 1917.
								Male.	Female.		
United States.....	51,034	1,529,162	8,881	1,762,810	2,036,661,250	\$11,647,551	\$7,350,280	6,271	11,868	\$6,015,383	\$56,416,873
Alabama.....	933	21,496	176	23,693	23,434,775	144,664	68,983	108	154	79,624	713,643
Arizona.....	44	1,156	8	831	891,800	4,451	685	5	9	10,791	134,029
Arkansas.....	1,941	27,597	218	31,800	40,249,300	188,985	114,491	84	232	98,418	704,616
California.....	1,857	30,867	75	22,328	24,402,950	128,276	138,018	61	84	56,833	1,298,226
Colorado.....	497	10,570	42	7,204	9,235,200	42,088	48,015	23	32	21,638	352,483
Connecticut.....	5	134	3	422	483,600	5,150	24	5	4	3,699	9,257
Delaware.....	47	713	506	596	394,875	1,971	3,900	1	150	150	31,284
Florida.....	101	6,192	52	4,603	6,329,375	86,721	10,248	63	64	44,880	246,284
Georgia.....	1,169	26,000	202	24,825	33,577,050	253,565	94,302	155	228	120,644	874,940
Idaho.....	330	7,734	41	7,078	7,087,925	49,105	38,954	31	49	34,185	413,308
Illinois.....	2,439	86,539	566	118,033	120,737,825	588,352	391,931	419	874	383,119	2,963,188
Indiana.....	1,512	75,682	482	92,064	103,361,375	632,011	167,716	332	690	230,389	2,585,752
Iowa.....	5,071	99,556	654	168,675	174,285,475	807,564	635,436	408	794	502,624	4,468,166
Kansas.....	2,490	91,119	488	112,171	147,106,700	700,091	356,628	432	771	453,115	3,230,411
Kentucky.....	1,558	37,161	276	41,519	42,201,250	179,464	90,595	125	258	103,770	884,141
Louisiana.....	440	7,209	47	6,021	6,887,075	54,893	15,557	24	47	24,561	199,593
Maine.....	186	8,350	69	10,115	7,694,050	107,255	10,466	52	96	45,918	453,060
Maryland.....	168	2,511	10	3,243	3,580,200	19,345	13,470	14	14	7,493	145,528
Massachusetts.....	13	856	9	804	771,875	12,561	852	8	14	5,463	31,823
Michigan.....	1,298	46,941	216	53,928	57,840,250	277,744	262,491	166	329	170,318	1,511,373
Minnesota.....	1,987	73,861	321	82,245	98,869,225	566,555	210,335	209	437	255,909	3,467,423
Mississippi.....	934	17,675	160	17,693	23,181,600	107,610	46,755	62	112	48,148	454,147
Missouri.....	4,633	113,909	625	145,783	160,445,025	592,024	356,131	436	899	398,487	3,769,139
Montana.....	276	8,921	42	6,342	6,683,950	87,306	23,987	37	56	38,072	532,094
Nebraska.....	1,321	50,122	185	52,325	65,728,325	369,650	186,230	180	264	185,972	1,922,137
Nevada.....	31	945	5	405	501,800	14,411	858	7	4	5,049	50,083
New Hampshire.....	51	3,103	22	2,998	4,316,650	46,347	1,385	26	41	20,336	104,228
New Jersey.....	91	2,813	10	2,925	4,667,325	25,357	12,813	13	26	13,826	174,094
New Mexico.....	108	4,089	25	2,150	3,351,400	40,299	7,550	13	31	17,516	173,099
New York.....	980	35,728	249	51,253	52,407,225	430,389	84,040	202	354	189,581	1,633,469
North Carolina.....	1,009	32,726	204	30,377	44,302,375	282,712	43,594	159	268	124,558	1,066,937
North Dakota.....	705	28,955	159	27,736	27,690,650	272,452	85,917	109	172	121,620	1,629,590
Ohio.....	749	57,470	356	71,527	83,012,800	499,364	143,722	280	640	283,622	2,199,320
Oklahoma.....	2,579	52,780	368	71,763	97,375,525	582,135	244,417	240	456	271,619	1,865,706
Oregon.....	931	23,668	120	22,037	28,940,275	131,306	96,671	68	148	72,019	838,501
Pennsylvania.....	1,505	52,941	254	57,253	62,235,875	418,008	2,288,862	228	439	178,087	2,416,192
South Carolina.....	528	11,964	104	11,881	16,740,100	134,476	24,342	83	117	62,953	441,100
South Dakota.....	620	26,024	126	30,709	34,460,725	331,090	55,756	130	153	122,960	1,197,496
Tennessee.....	1,403	48,080	293	44,312	57,743,725	214,140	120,480	223	338	137,835	1,227,015
Texas.....	5,129	138,608	750	125,491	159,333,850	865,650	392,791	345	834	400,060	3,740,808
Utah.....	55	2,650	17	2,534	3,659,825	35,021	2,107	16	32	15,132	192,431
Vermont.....	75	5,845	37	7,357	10,461,100	68,074	13,239	35	63	34,633	257,626
Virginia.....	657	23,127	193	25,893	32,521,125	167,222	66,001	121	223	90,023	868,273
Washington.....	1,068	26,304	118	25,653	25,563,200	205,671	90,771	88	156	101,743	1,226,557
West Virginia.....	373	23,702	186	33,509	25,662,975	103,700	89,927	60	272	87,444	833,940
Wisconsin.....	968	69,272	288	77,516	93,120,300	730,772	181,606	366	550	317,923	2,622,814
Wyoming.....	169	5,497	30	3,150	3,131,375	41,554	17,231	19	40	22,624	261,549

The systems and lines with annual incomes of less than \$5,000 are largely small farmer or rural lines, while the lines of the systems reporting annual incomes of \$5,000 or more are predominantly urban lines. No exact division between the two groups, however, can be made on this basis; some of the smaller systems are located in the smaller cities and towns, not infrequently operating in the same community as the large systems; on the other hand, many of the larger systems have extensive farmer or rural lines which

they own and operate and which form integral parts of their systems.

Public and private-branch exchanges.—The telephone companies and systems that had an annual income of \$5,000 or more at the censuses of 1912 and 1917 reported the number of public-exchange offices and private-branch exchanges. As previously explained, a retabulation was made in 1912 of the reports for 1907 in order to show these statistics for the same class of companies for that census, but it was

impossible to make a retabulation of the reports for 1902, therefore, comparable statistics are confined to the last three censuses.

For census purposes the "exchange," or "central office," is defined as the place or office in which lines for the use of the general public are interconnected by means of a switchboard. The word "exchange," when used by itself in this report, refers to the public exchange and not to the private-branch exchange, which consists of a switchboard located within a business building, apartment house, hotel, or private establishment, and serves as a means of connection for wires between buildings, departments, offices, or rooms as well as with the central office or exchange.

The combination of the statistics for the two classes of exchanges would have but little, if any, significance. In fact, a total of all exchanges would be misleading. The following statement shows the amount of this class of equipment:

CENSUS YEAR.	Public exchanges. ¹	Private-branch exchanges. ¹
1917.....	12,294	80,914
1912.....	11,515	52,651
1907.....	10,613	28,276

¹ Only systems reporting annual incomes of \$5,000 or more.

During the period from 1907 to 1917, while there was an appreciable increase in the number of public exchanges, there was a very large increase in the private-branch exchanges. The installation of private-branch exchanges in hotels and manufacturing and mercantile establishments has become quite general. They insure quick and satisfactory communication between different rooms and departments, and are now considered a necessity in every institution of any magnitude.

The statistics for companies with an annual income of \$5,000 or more, cover a majority of all public exchanges. Of the 51,034 smaller systems or lines in 1917, 8,881 reported that they operated at least one exchange. Since these small systems were not required to state how many exchanges they operated the actual number of exchanges in 1917 was doubtless slightly more than the number of these small systems operating telephone exchanges. The number of exchanges operated by systems reporting annual incomes of less than \$5,000 was not reported in 1912, but the number of such exchanges in 1907 was 4,914.

The private-branch exchange is an almost exclusive characteristic of the large companies, and it is probable that the total of 80,914 shown in the foregoing statement represents approximately the actual number wired for use by all telephone systems, large and small, in 1917.

The number of public exchanges is shown in Table 26 and the number of private-branch exchanges in Table 27.

Messages or talks.—The word "traffic" is generally used to indicate the amount of business, or, in other words, the number of messages passing over the wires. A message may be either a few words or a long conversation, and may be transmitted over a long or a short distance. Hence, the number of calls does not fully represent the extent to which the equipment is used. All systems reporting an annual income of \$5,000 or more in 1912 and 1917 were required to report the number of messages originating on their lines during the year. The inquiry was limited to the originating calls in order to avoid the duplication which would have resulted if incoming calls were also reported. Therefore, companies were requested to report the "estimated total number of telephone connections or calls, including both completed and uncompleted, during the year *originating* from telephones owned and operated by the company reporting."

In 1917 the smaller systems and independent farmer lines were also required to report the number of messages, although it had been found at previous censuses that the statistics furnished by these latter organizations were not very reliable. No doubt a considerable number of messages passing over lines of the smaller systems were also reported by the larger systems performing switching service for them, even though the larger companies received the instructions quoted above. It was of course impossible to obtain information as to messages passing through private-branch exchanges and over party lines when calls on such lines did not require interconnection at a public exchange. Local exchange messages were reported separately from long-distance and toll messages. Messages originating and terminating within the same public exchange district were counted as exchange messages, as they do not involve any interchange of business between separate companies or separate exchanges. Long-distance and toll messages are those between different localities.

In considering traffic statistics it must be remembered that the quantity of traffic is very largely estimated. Many of the larger companies make an actual count of the messages handled during a certain period of each month, and this is used by them as a basis for computing the amount of yearly business. Other companies, however, keep no records on which reliable estimates can be based. In this connection, however, it should be stated that the figures for 1917 are probably more accurate than those for any prior census, because a larger proportion of the companies kept records in 1917 than in previous years.

Table 15 shows the number of exchange and of long-distance or toll messages reported for 1917, 1912, 1907, and 1902, together with the percentage which each class formed of the total number of messages reported at each census. The statistics for 1917, 1912, and 1907 represent the companies reporting annual incomes of \$5,000 and over, while those for 1902 are for all companies that had exchanges. The table shows that there has been little variation in the proportion of exchange and long-distance messages from census to census.

CENSUS YEAR.	Estimated number of messages.			Per cent of total.	
	Total.	Exchange.	Long-distance or toll.	Ex-change.	Long-distance or toll.
1917.....	19,809,061,085	19,366,111,091	442,949,994	97.8	2.2
1912.....	13,735,658,245	13,394,885,442	340,772,803	97.5	2.5
1907.....	10,400,433,958	10,160,630,944	239,803,014	97.7	2.3
1902 ¹	5,070,554,553	4,949,849,709	120,704,844	97.6	2.4

¹ Number reported by all systems which had exchanges.

Table 16 presents for each geographic division and state, for the systems reporting annual incomes of \$5,000 or more, the number of local and long-distance messages recorded in 1917, together with the per cent which each constitutes of the total messages.

Toll messages constituted a much larger proportion of the total messages in the New England and Middle Atlantic states than in the other sections of the country. All 9 of these states are included in the 12 states leading in this respect, the other 3 being Maryland, Delaware, and Arizona. New Jersey had a very much larger proportion of toll calls than any other state in the country due to the fact that all the calls across the Hudson to New York, and across the Delaware to Philadelphia were classed as toll calls. Maryland, Rhode Island, New York, and Connecticut ranked next, in order named. In general, it may be said that the states having the larger number of telephones per 1,000 population reported a smaller proportion of toll messages. In the Middle West (the East North Central and West North Central states) which as shown in Table 13 have the greatest density of telephones, the proportion that toll messages constituted of the total number of messages was less than for the country as a whole. The only two states in this region which had approximately the same proportion of toll messages, as was reported for the entire country, were North Dakota and South Dakota, and these two states were the ones which had the smallest number of telephones per 1,000 population of any of the middle-western states.

DIVISION AND STATE.	Number of messages.			Per cent of total.	
	Total.	Exchange.	Long distance or toll.	Ex-change.	Long distance or toll.
UNITED STATES.	19,809,061,085	19,366,111,091	442,949,994	97.8	2.2
GEOGRAPHIC DIVISIONS:					
New England....	1,491,798,705	1,439,128,709	52,669,996	96.5	3.5
Middle Atlantic..	3,759,253,241	3,588,462,792	170,790,449	95.5	4.5
East North Central.....	5,459,843,329	5,386,779,986	73,063,343	98.7	1.3
West North Central.....	3,080,583,974	3,038,023,671	42,560,303	98.6	1.4
South Atlantic....	1,409,721,700	1,384,294,850	25,426,850	98.2	1.8
East South Central.....	962,576,140	951,305,941	11,270,199	98.8	1.2
West South Central.....	1,515,971,215	1,491,928,599	24,042,616	98.4	1.6
Mountain.....	500,269,587	489,079,797	11,189,790	97.8	2.2
Pacific.....	1,629,043,194	1,597,106,746	31,936,448	98.0	2.0
NEW ENGLAND:					
Maine.....	144,507,158	139,941,709	4,565,449	96.8	3.2
New Hampshire....	87,351,473	84,464,149	2,887,324	96.7	3.3
Vermont.....	98,614,464	96,000,158	2,614,306	97.3	2.7
Massachusetts....	800,057,085	772,077,713	27,979,372	96.5	3.5
Rhode Island.....	105,594,600	101,031,463	4,563,137	95.7	4.3
Connecticut.....	255,673,925	245,613,517	10,060,408	96.1	3.9
MIDDLE ATLANTIC:					
New York.....	2,101,225,651	2,016,661,163	84,564,488	96.0	4.0
New Jersey.....	335,130,108	290,109,986	45,020,122	86.6	13.4
Pennsylvania....	1,322,897,482	1,281,691,643	41,205,839	96.9	3.1
EAST NORTH CENTRAL:					
Ohio.....	1,662,588,046	1,644,619,774	17,968,272	98.9	1.1
Indiana.....	784,487,523	774,457,608	10,029,915	98.7	1.3
Illinois.....	1,682,589,280	1,655,705,534	26,883,746	98.4	1.6
Michigan.....	841,989,847	832,496,685	9,493,162	98.9	1.1
Wisconsin.....	488,188,633	479,500,385	8,688,248	98.2	1.8
WEST NORTH CENTRAL:					
Minnesota.....	630,210,504	620,796,987	9,413,517	98.5	1.5
Iowa.....	634,311,700	624,930,747	9,380,953	98.5	1.5
Missouri.....	842,595,853	833,659,523	8,936,330	98.9	1.1
North Dakota....	81,705,350	79,696,029	2,009,321	97.5	2.5
South Dakota....	92,113,268	90,103,731	2,009,537	97.8	2.2
Nebraska.....	425,428,689	420,161,669	5,267,020	98.8	1.2
Kansas.....	374,218,610	368,674,985	5,543,625	98.5	1.5
SOUTH ATLANTIC:					
Delaware.....	36,604,568	35,555,312	1,049,256	97.1	2.9
Maryland.....	182,654,086	173,476,750	9,177,336	95.0	5.0
District of Columbia.....	111,132,636	109,892,280	1,240,356	98.9	1.1
Virginia.....	219,957,057	218,042,124	1,914,933	99.1	0.9
West Virginia....	126,701,314	124,203,024	2,498,290	98.0	2.0
North Carolina..	173,012,977	170,039,568	2,973,409	98.3	1.7
South Carolina..	94,142,343	92,788,840	1,353,503	98.6	1.4
Georgia.....	324,047,185	320,083,978	3,963,207	98.8	1.2
Florida.....	141,469,534	140,212,674	1,256,860	99.1	0.9
EAST SOUTH CENTRAL:					
Kentucky.....	339,414,688	336,282,482	3,132,206	99.1	0.9
Tennessee.....	321,450,567	318,633,742	2,816,825	99.1	0.9
Alabama.....	175,658,670	173,330,766	2,327,904	98.7	1.3
Mississippi.....	126,052,215	123,058,951	2,993,264	97.6	2.4
WEST SOUTH CENTRAL:					
Arkansas.....	167,274,716	164,864,633	2,410,083	98.6	1.4
Louisiana.....	192,731,445	189,779,974	2,951,471	98.5	1.5
Oklahoma.....	306,691,645	300,047,646	6,643,999	97.8	2.2
Texas.....	849,273,409	837,236,346	12,037,063	98.6	1.4
MOUNTAIN:					
Montana.....	78,355,645	76,616,862	1,738,783	97.8	2.2
Idaho.....	52,878,610	51,481,440	1,397,170	97.4	2.6
Wyoming.....	28,912,599	28,381,760	530,839	98.2	1.8
Colorado.....	182,030,107	177,531,139	4,498,968	97.5	2.5
New Mexico.....	25,462,623	25,007,179	455,444	98.2	1.8
Arizona.....	21,031,654	20,399,958	631,696	97.0	3.0
Utah.....	99,014,412	97,375,864	1,638,548	98.3	1.7
Nevada.....	12,583,937	12,285,595	298,342	97.6	2.4
PACIFIC:					
Washington.....	328,583,795	324,511,985	4,071,810	98.8	1.2
Oregon.....	202,998,735	200,286,404	2,712,331	98.7	1.3
California.....	1,097,460,664	1,072,308,357	25,152,307	97.7	2.3

It should be noted that Table 16 presents only messages reported by systems having annual incomes of \$5,000 or more. The small systems were not required to segregate the number of messages which they reported so as to show the number of exchange messages separately from the toll calls. The messages reported by systems or lines having annual incomes of less than \$5,000 in most states constituted such a very small proportion of the total messages that, they can be omitted from the tabulated statistics without making any important difference in the total. The reports of these small organizations are, moreover, much less reliable in this respect than are the reports of the larger systems. Consequently, it is deemed inadvisable to use the estimated number of messages or talks reported by the small lines or systems in 1917 for making any important deductions regarding the traffic conditions of the telephone industry.

Table 17 presents for systems having annual incomes of \$5,000 or more, by geographic divisions and states, the statistics of the number of telephones, the estimated number of messages or talks, and the number of messages per telephone per day, for 1917, 1912 and 1907.

The number of telephones shown in this table for the year 1917 is the average number. This average was obtained from the reports made by each of the large companies showing the number of telephones wired for use on December 31, 1916, and the corresponding number on December 31, 1917. The statistics thus obtained, together with the derived average, are presented for both the Bell Telephone System and the large non-Bell telephone systems (those reporting annual incomes of \$5,000 or more), by geographic divisions and states, in Table 18. The

number of telephones reported for the larger systems for 1912 and 1907 is in each case the number in operation on December 31 of the census year, so that the number of messages or talks per telephone per day as reported for these two earlier census years may be slightly less than would have been the case if the average number of telephones had been reported at these censuses. Except in this and in the following table, the number of telephones shown for the year 1917 is not the average number but the number in operation on December 31 of that year.

The Southern states, in which the number of telephones per 1,000 population is comparatively small, show the largest number of telephone messages per day. Louisiana, Tennessee, Alabama, Georgia, Mississippi and Florida all reported 10 or more telephone calls per telephone per day. The 12 leading states in this respect are all Southern states.

The number of calls per telephone per day reported for the United States by the larger systems has averaged approximately six at each of the last three censuses. The number of days used to secure this average is 325, this being the number of days determined upon by traffic experts as most nearly representing the average conditions, allowing for the decreased business which takes place on Sundays and holidays.

Table 18 presents separately for the Bell System and the larger independent telephone systems, by geographic divisions and states, the number of telephones reported on December 31, 1917 and the number reported on December 31, 1916, together with the average number for 1917 computed from these data. This table is used as the basis for the number of telephones shown for 1917 in the preceding table.

Table 17

SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE.

DIVISION AND STATE.	Number of telephones. ¹			Estimated number of messages or talks.					
	1917	1912	1907	1917	1912	1907	Per telephone per day. ²		
							1917	1912	1907
UNITED STATES.....	9,697,110	7,326,748	4,906,693	19,809,061,085	13,735,658,245	10,400,433,958	6.3	5.8	6.5
GEOGRAPHIC DIVISIONS:									
New England.....	834,412	600,207	384,413	1,491,798,705	810,524,037	572,523,863	5.5	4.2	4.6
Middle Atlantic.....	2,272,496	1,675,681	1,167,667	3,759,253,241	2,422,868,241	1,947,571,139	5.1	4.4	5.1
East North Central.....	2,674,315	2,020,802	1,360,544	5,459,843,329	4,025,906,387	3,067,416,613	6.3	6.1	7.6
West North Central.....	1,461,808	1,109,359	767,050	3,080,583,974	2,238,770,606	1,664,198,498	6.5	6.2	6.7
South Atlantic.....	579,448	428,311	296,271	1,409,721,700	869,439,943	749,939,984	7.5	6.2	7.8
East South Central.....	304,770	261,294	197,291	962,576,140	662,046,512	731,000,908	9.7	7.8	11.4
West South Central.....	492,420	387,022	239,746	1,515,971,215	1,079,517,948	646,501,299	9.5	8.6	8.3
Mountain.....	268,493	204,508	141,339	500,269,587	435,366,129	299,270,686	5.7	6.6	6.5
Pacific.....	808,948	639,564	352,372	1,629,043,194	1,191,218,442	722,010,968	6.2	5.7	6.3
NEW ENGLAND:									
Maine.....	76,657	57,988	43,846	144,507,158	84,033,152	73,197,982	5.8	4.5	5.1
New Hampshire.....	48,581	36,052	24,345	87,351,473	49,984,600	36,537,513	5.5	4.3	4.6
Vermont.....	39,847	31,498	22,117	88,614,464	48,306,101	35,666,768	7.6	4.7	5.0
Massachusetts.....	462,326	328,503	207,201	900,057,085	401,817,540	298,824,440	5.3	3.8	4.4
Rhode Island.....	62,287	41,664		105,594,600	48,211,556		5.2	3.6	
Connecticut.....	144,714	104,502	86,904	255,673,925	178,171,088	128,297,160	5.4	5.2	4.5
MIDDLE ATLANTIC:									
New York.....	1,250,751	923,136	637,881	2,101,225,651	1,297,849,047	1,034,651,594	5.2	4.3	5.0
New Jersey.....	245,296	182,419	114,528	335,130,108	192,311,511	138,914,642	4.2	3.2	3.7
Pennsylvania.....	776,449	570,126	415,258	1,322,897,482	932,707,683	774,004,903	5.2	5.0	5.7
EAST NORTH CENTRAL:									
Ohio.....	749,607	567,573	431,851	1,662,588,046	1,301,503,565	1,044,222,376	6.8	7.1	7.2
Indiana.....	356,970	244,291	202,492	784,487,523	583,621,519	498,560,085	6.7	6.5	7.6
Illinois.....	929,308	704,230	434,518	1,682,589,280	1,108,751,431	833,749,155	5.6	4.8	5.9
Michigan.....	372,650	288,154	179,263	841,989,847	694,363,258	413,557,846	7.0	7.4	7.1
Wisconsin.....	265,780	186,554	112,420	488,188,633	340,666,614	307,327,151	5.6	5.6	8.4
WEST NORTH CENTRAL:									
Minnesota.....	317,770	208,340	125,884	630,210,504	418,720,464	274,434,452	6.1	6.2	6.7
Iowa.....	309,105	242,963	187,938	634,311,700	471,126,059	366,184,981	6.3	6.0	5.5
Missouri.....	356,048	285,472	192,943	842,595,853	655,616,330	468,138,352	7.3	7.1	7.5
North Dakota.....	46,578	32,915	20,835	81,705,350	49,861,643	39,874,764	5.4	4.7	4.6
South Dakota.....	56,692	39,299	27,801	92,113,268	47,881,574	60,548,810	5.0	3.7	6.7
Nebraska.....	190,978	156,619	107,518	425,428,689	291,615,175	246,047,837	6.8	5.7	7.0
Kansas.....	184,637	143,751	104,131	374,218,610	303,949,361	238,969,302	6.2	6.5	7.1
SOUTH ATLANTIC:									
Maryland.....	112,133	81,686		182,654,086	104,008,361		5.0	3.9	
Delaware.....	21,040	15,210		36,604,568	26,810,915		5.4	5.4	
District of Columbia.....	65,050	46,603	107,553	111,132,636	46,936,446	165,995,216	5.2	3.1	4.7
Virginia.....	91,163	56,968	38,963	219,957,057	164,421,931	115,354,885	7.4	8.9	9.1
West Virginia.....	57,264	55,033	46,709	126,701,314	103,255,136	109,065,223	6.8	5.8	7.2
North Carolina.....	60,084	41,177	22,379	173,012,977	90,831,013	80,667,891	8.9	6.8	11.1
South Carolina.....	31,201	24,871	15,393	94,142,343	68,170,380	51,558,785	9.3	8.4	10.3
Georgia.....	98,218	78,864	52,568	324,047,185	206,631,042	187,647,940	10.2	8.1	11.0
Florida.....	43,295	27,899	12,706	141,469,534	58,374,719	39,650,044	10.0	6.4	9.6
EAST SOUTH CENTRAL:									
Kentucky.....	118,432	100,174	75,370	339,414,688	287,807,892	276,476,058	8.8	8.8	11.3
Tennessee.....	95,147	78,717	60,357	321,450,567	188,865,474	231,218,675	10.4	7.4	11.8
Alabama.....	52,314	44,144	32,473	175,658,670	100,983,408	102,736,572	10.3	7.0	9.7
Mississippi.....	38,877	38,259	29,091	126,052,215	84,389,738	120,569,603	10.0	6.8	12.8
WEST SOUTH CENTRAL:									
Arkansas.....	54,380	45,743	32,288	167,274,716	124,445,991	71,950,886	9.5	8.4	6.9
Louisiana.....	52,122	43,906	33,448	192,731,445	101,597,617	120,647,366	11.4	7.1	11.1
Oklahoma.....	101,088	65,215	36,758	306,691,645	163,999,696	108,725,669	9.3	7.7	9.1
Texas.....	284,830	232,158	137,252	849,273,409	689,474,644	345,177,378	9.2	9.1	7.7
MOUNTAIN:									
Montana.....	42,682	31,188	14,699	78,355,645	74,199,460	18,869,410	5.6	7.3	3.9
Idaho.....	28,883	23,475	13,743	52,878,610	45,634,703	24,883,595	5.6	6.0	5.6
Colorado.....	104,964	85,886	62,861	182,030,107	165,041,709	138,203,561	5.3	5.9	6.8
New Mexico.....	12,656	9,047	5,496	25,462,623	20,174,437	12,548,942	6.2	7.9	7.0
Arizona.....	16,510	10,128	5,285	21,031,654	11,573,427	10,379,750	3.9	3.5	6.0
Utah.....	43,019	32,018		99,014,412	93,122,868		7.1	8.9	
Wyoming.....	11,791	7,471	35,156	28,912,599	17,121,932	87,596,483	7.5	7.1	7.7
Nevada.....	7,988	5,295	4,099	12,583,937	8,497,593	6,788,945	4.8	4.9	5.1
PACIFIC:									
Washington.....	159,481	134,040	86,439	328,583,795	295,273,362	200,184,465	6.3	6.8	7.1
Oregon.....	101,751	84,923	37,171	202,998,735	170,065,267	83,833,537	6.1	6.2	6.9
California.....	547,716	420,601	228,762	1,097,460,664	755,879,813	437,992,966	6.2	5.3	5.9

¹ For 1917 this is the average number; for 1912 and 1907 it is the number on Dec. 31.² Computed on the basis of 325 days to the year. (See note 1.)

ELECTRICAL INDUSTRIES: 1917.

Table 18

SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—NUMBER OF TELEPHONES.

DIVISION AND STATE.	Total.			Bell Telephone System.			All other systems.		
	Average number for 1917.	On Dec. 31, 1917.	On Dec. 31, 1916.	Average number for 1917.	On Dec. 31, 1917.	On Dec. 31, 1916. ¹	Average number for 1917.	On Dec. 31, 1917.	On Dec. 31, 1916. ¹
UNITED STATES.....	9,697,110	9,953,712	9,440,511	7,122,249	7,326,858	6,917,641	2,574,861	2,626,852	2,522,870
GEOGRAPHIC DIVISIONS:									
New England.....	834,412	856,658	812,165	805,494	827,407	783,581	28,918	29,251	28,584
Middle Atlantic.....	2,272,496	2,332,774	2,212,217	1,896,798	1,952,601	1,840,996	375,698	380,173	371,221
East North Central.....	2,674,316	2,745,921	2,602,710	1,665,749	1,714,650	1,616,847	1,008,567	1,031,271	985,863
West North Central.....	1,461,807	1,500,091	1,423,524	758,777	781,254	736,300	703,030	718,837	687,224
South Atlantic.....	579,448	604,704	554,192	478,224	500,697	455,752	101,224	104,007	98,440
East South Central.....	304,770	309,636	299,905	219,289	222,109	216,468	85,481	87,527	83,437
West South Central.....	492,420	504,929	479,912	366,290	376,900	355,680	126,130	128,029	124,232
Mountain.....	268,493	277,893	259,093	249,156	257,653	240,659	19,337	20,240	18,434
Pacific.....	808,948	821,104	796,793	682,472	693,587	671,358	126,476	127,517	125,435
NEW ENGLAND:									
Maine.....	76,657	78,111	75,203	68,121	69,471	66,771	8,536	8,640	8,432
New Hampshire.....	48,581	49,536	47,626	44,969	45,913	44,026	3,612	3,613	3,600
Vermont.....	39,847	40,611	39,083	28,578	29,105	28,051	11,269	11,506	11,032
Massachusetts.....	462,326	474,427	450,225	458,028	470,174	445,882	4,298	4,253	4,343
Rhode Island.....	62,287	64,726	59,848	62,287	64,726	59,848			
Connecticut.....	144,714	149,247	140,180	143,511	148,018	139,003	1,203	1,229	1,177
MIDDLE ATLANTIC:									
New York.....	1,250,751	1,283,802	1,217,699	1,125,230	1,159,659	1,090,801	125,521	124,143	126,898
New Jersey.....	245,296	251,519	239,072	232,325	238,172	226,478	12,971	13,347	12,594
Pennsylvania.....	776,449	797,453	755,446	539,243	554,770	523,717	237,206	242,683	231,729
EAST NORTH CENTRAL:									
Ohio.....	749,606	774,122	725,091	367,642	381,677	353,607	381,964	392,445	371,484
Indiana.....	356,971	366,928	347,013	170,600	176,769	164,430	186,371	190,159	182,583
Illinois.....	929,309	952,961	905,653	706,105	725,767	686,443	223,204	227,197	219,210
Michigan.....	372,650	380,200	365,100	255,286	260,711	249,861	117,364	119,489	115,239
Wisconsin.....	265,780	271,707	259,853	166,116	169,726	162,506	99,664	101,981	97,347
WEST NORTH CENTRAL:									
Minnesota.....	317,769	325,977	309,562	168,404	173,696	163,113	149,365	152,281	146,449
Iowa.....	309,105	320,757	297,453	185,449	195,295	175,603	123,656	125,462	121,850
Missouri.....	356,048	365,463	346,633	171,555	176,124	166,986	184,493	189,339	179,647
North Dakota.....	46,578	47,613	45,542	28,041	28,647	27,434	18,537	18,966	18,108
South Dakota.....	56,692	58,237	55,147	12,927	13,059	12,794	43,765	45,127	42,353
Nebraska.....	190,978	195,942	186,015	82,000	83,992	80,009	108,978	111,950	106,006
Kansas.....	184,637	186,102	183,172	110,401	110,441	110,361	74,236	75,661	72,811
SOUTH ATLANTIC:									
Maryland.....	112,133	115,154	109,112	111,756	114,769	108,743	377	385	369
Delaware.....	21,040	21,626	20,452	18,588	19,231	17,944	2,452	2,395	2,508
District of Columbia.....	65,050	70,751	59,348	65,050	70,751	59,348			
Virginia.....	91,163	93,704	88,623	73,105	74,845	71,365	18,058	18,859	17,258
West Virginia.....	57,264	66,021	48,508	45,188	53,631	36,746	12,076	12,390	11,762
North Carolina.....	60,084	61,551	58,618	39,581	40,374	38,789	20,503	21,177	19,829
South Carolina.....	31,201	31,835	30,566	26,689	27,126	26,252	4,512	4,709	4,314
Georgia.....	98,218	99,654	96,783	77,914	79,016	76,813	20,304	20,638	19,970
Florida.....	43,295	44,408	42,182	20,353	20,954	19,752	22,942	23,454	22,430
EAST SOUTH CENTRAL:									
Kentucky.....	118,432	121,324	115,540	60,140	61,551	58,728	58,292	59,773	55,812
Tennessee.....	95,147	96,357	93,937	77,256	77,984	76,528	17,891	18,373	17,409
Alabama.....	52,314	53,000	51,629	46,804	47,440	46,109	5,510	5,560	5,460
Mississippi.....	38,877	38,955	38,799	35,089	35,134	35,043	3,788	3,821	3,756
WEST SOUTH CENTRAL:									
Arkansas.....	54,380	56,072	52,689	40,887	41,986	39,789	13,493	14,086	12,900
Louisiana.....	52,122	57,869	46,375	48,254	54,014	42,453	3,868	3,855	3,882
Oklahoma.....	101,088	105,072	97,104	85,726	89,047	82,404	15,362	16,015	14,700
Texas.....	284,830	285,916	283,744	191,423	191,853	190,994	93,407	94,063	92,750
MOUNTAIN:									
Montana.....	42,682	45,067	40,297	39,008	41,117	36,899	3,674	3,950	3,398
Idaho.....	28,883	30,126	27,641	25,332	26,455	24,209	3,551	3,671	3,432
Wyoming.....	11,791	12,624	10,958	11,146	11,879	10,413	645	745	545
Colorado.....	104,964	107,160	102,768	103,356	105,539	101,174	1,608	1,621	1,594
New Mexico.....	12,656	13,124	12,187	10,899	11,310	10,487	1,757	1,814	1,700
Arizona.....	16,510	17,394	15,626	15,020	15,825	14,216	1,490	1,569	1,410
Utah.....	43,019	44,087	41,951	40,823	41,814	39,832	2,196	2,273	2,119
Nevada.....	7,988	8,311	7,665	3,572	3,714	3,429	4,416	4,597	4,236
PACIFIC:									
Washington.....	159,481	162,754	156,208	127,035	130,235	123,835	32,446	32,519	32,373
Oregon.....	101,751	103,623	99,879	74,478	75,631	73,325	27,273	27,992	26,554
California.....	547,716	554,727	540,706	480,959	487,721	474,198	66,757	67,006	66,508

¹ The number of telephones for Dec. 31, 1916, is shown on the basis of the ownership as of Dec. 31, 1917.

The Bell Telephone System shows a larger number of telephones at the end of 1917 than at the end of 1916 in every state in the Union. This condition is due to the normal increase in business which took place during the year, the number of telephones for December 31, 1916, being reported on the basis of the ownership as of December 31, 1917. The non-Bell telephone system showed a fair increase during the year for the United States as a whole and reported decreases in only four states, Massachusetts, New York, Delaware, and Louisiana. The combined figures for the Bell and other telephone systems show no decreases for the year.

Traffic and population.—Tables 19 and 20 show the number of messages per capita for the four census years, 1917, 1912, 1907, and 1902. In computing the number of messages per capita in these tables only the number of messages reported by systems having annual incomes of \$5,000 or more was used for the years 1917, 1912, and 1907. In 1902 this information was reported by all commercial telephone systems. Table 19 shows the number of messages per capita for each of the geographic divisions. Table 20 presents this information by states, the states being arranged according to their rank in 1917 in this respect.

DIVISION.	SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—NUMBER OF MESSAGES PER CAPITA.			
	1917	1912	1907	1902
United States.....	191	144	122	65
New England.....	206	120	94	52
Middle Atlantic.....	170	120	110	57
East North Central.....	274	215	174	105
West North Central.....	245	188	146	67
South Atlantic.....	105	69	65	33
East South Central.....	106	77	88	49
West South Central.....	145	116	80	44
Mountain.....	150	153	150	58
Pacific.....	297	260	259	110

The largest number of messages per capita is reported from the Middle West and Pacific Coast states, most of the states leading in this respect being

found in these regions. The Southern states, on the other hand, are largely those reporting the smallest number of messages per capita.

The large increase in the use of the telephone is indicated not only by the increase in the number of telephones but also by the increase in the number of messages per capita as presented in these tables. The largest relative increases in this respect for the 15-year period 1902 to 1917 are shown for Maine, Kansas, Nebraska, Vermont, and New Hampshire.

Table 20

STATE.	SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—NUMBER OF MESSAGES PER CAPITA.			
	1917	1912	1907	1902
California.....	362	282	261	116
Nebraska.....	331	239	230	67
Ohio.....	319	265	226	131
District of Columbia.....	301	137	.....	.....
Iowa.....	286	212	153	84
Indiana.....	277	213	182	114
Michigan.....	272	240	158	96
Minnesota.....	272	195	132	62
Vermont.....	270	135	101	55
Illinois.....	270	190	151	108
Missouri.....	246	197	137	76
Oregon.....	235	233	173	83
Utah.....	223	236	.....	.....
Massachusetts.....	212	115	97	63
Washington.....	206	230	317	116
Kansas.....	202	175	145	40
Connecticut.....	202	153	.....	.....
New York.....	201	136	123	48
New Hampshire.....	196	115	84	41
Wisconsin.....	193	142	134	48
Texas.....	188	169	95	52
Maine.....	186	112	102	31
Colorado.....	184	193	220	108
Delaware.....	170	130	.....	.....
Rhode Island.....	169	84	.....	.....
Montana.....	166	183	60	43
Wyoming.....	156	108	.....	.....
Florida.....	154	73	61	34
Pennsylvania.....	153	117	110	76
Kentucky.....	142	124	118	65
Tennessee.....	139	85	105	62
Oklahoma.....	134	89	77	35
Maryland.....	133	79	.....	.....
South Dakota.....	128	79	127	42
Idaho.....	119	126	117	37
Nevada.....	114	94	160	34
Georgia.....	112	77	76	42
New Jersey.....	111	72	62	29
North Dakota.....	107	79	82	41
Louisiana.....	104	59	77	47
Virginia.....	99	78	67	34
Arkansas.....	95	76	50	27
West Virginia.....	90	81	100	42
Arizona.....	80	52	71	39
Alabama.....	74	46	50	24
North Carolina.....	71	40	39	19
Mississippi.....	64	46	70	38
New Mexico.....	60	57	57	21
South Carolina.....	57	44	35	17

CHAPTER IV.—COMPARISON OF BELL AND OTHER SYSTEMS.

Companies for which the statistics are compared.—There were 2,200 telephone systems reported at the census of 1917, which had annual incomes of \$5,000 or more. Of this number, 145 constituted what is commonly known as the Bell Telephone System. The principal offices of these 145 companies are located in 27 different states. Many of them operated in more than one state and the Bell System's local and long-distance service extends into all states. The miles of wire and the number of telephones are the only features for which satisfactory comparison can be made between the Bell System and all other systems because the other features have not been reported for the companies or systems

that had annual incomes of less than \$5,000 at the different censuses. The comparison for the last four census years between the Bell Telephone System and all other systems is presented in Table 2.

The tables in this chapter present a comparison between the Bell Telephone System and all other systems reporting annual incomes of \$5,000 or more, except that the tables giving miles of wire and number of telephones show the statistics for all the independent systems and lines.

Table 21 presents this comparison for the years 1917 and 1912 for all the important items for which comparable figures for the two years can be shown.

Table 21

	SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000, OR MORE.					
	Total.		Bell Telephone System.		All other systems.	
	1917	1912	1917	1912	1917	1912
Number of systems.....	2,200	1,916	145	176	2,055	1,740
Number of public exchanges.....	12,294	11,515	6,288	5,853	6,006	5,662
Number of private-branch exchanges.....	80,914	52,651	72,253	45,287	8,661	7,264
Miles of pole line.....	780,200	671,686	400,895	353,422	379,305	318,264
Miles of wire.....	27,298,026	19,019,391	23,133,718	15,133,186	4,164,308	3,886,205
Miles of phantom circuit.....	315,037	7,326,748	287,049	5,087,027	27,988	2,239,721
Number of telephones.....	9,953,710	7,326,748	7,326,858	5,087,027	2,626,852	2,239,721
Estimated number of messages or talks.....	19,809,061,085	13,735,658,245	14,597,567,869	9,133,226,836	5,211,493,216	4,602,431,409
Local exchange.....	19,366,111,091	13,394,885,442	14,236,304,195	8,886,838,093	5,129,806,896	4,508,047,349
Long-distance or toll.....	442,949,994	340,772,803	361,263,674	246,388,743	81,686,320	94,384,060
Average messages or talks per telephone.....	1,990	1,875	1,992	1,795	1,983	2,055
Local exchange.....	1,946	1,828	1,943	1,747	1,952	2,013
Long-distance or toll.....	44	47	49	48	31	42
Revenue, operating and nonoperating.....	\$372,501,800	\$253,893,969	\$311,918,260	\$206,095,172	\$60,583,540	\$47,798,797
Expenses, including taxes and fixed charges, total.....	\$313,103,060	\$202,567,644	\$260,783,288	\$162,988,447	\$52,319,772	\$39,579,197
Net income.....	\$59,398,740	\$51,326,325	\$51,134,972	\$43,106,725	\$8,263,768	\$8,219,600
Dividends.....	\$42,266,589	\$34,120,809	\$37,020,809	\$29,709,841	\$5,245,780	\$4,410,968
Assets, total.....	\$1,665,120,922	\$1,295,670,101	\$1,331,599,048	\$934,805,563	\$333,521,874	\$360,864,538
Value of plant and equipment.....	\$1,435,912,142	\$1,081,433,227	\$1,140,639,666	\$780,017,745	\$295,272,476	\$301,415,482
Stocks and bonds and other permanent investments.....	\$97,287,729	\$104,554,667	\$87,997,104	\$72,629,170	\$9,290,625	\$31,925,497
Cash and current assets.....	\$82,026,232	\$96,618,255	\$67,358,132	\$82,158,648	\$14,668,100	\$14,459,607
Sundries, including materials and supplies, stock and bond discount, and sinking and other special funds.....	\$49,894,819	\$13,063,952	\$35,604,146	.....	\$14,290,673	\$13,063,952
Liabilities, total.....	\$1,665,120,922	\$1,295,670,101	\$1,331,599,048	\$934,805,563	\$333,521,874	\$360,864,538
Capital stock.....	\$665,944,471	\$586,763,879	\$509,409,055	\$337,885,433	\$156,535,416	\$188,878,446
Funded debt, including real-estate mortgages of incorporated systems.....	\$503,129,399	\$405,662,528	\$410,357,279	\$295,972,603	\$92,772,120	\$109,689,925
Floating debt and accounts payable, etc.....	\$46,817,996	\$70,610,342	\$21,803,277	\$49,718,370	\$25,014,719	\$20,891,972
Cash investments.....	\$4,946,599	\$3,287,138	.....	.....	\$4,946,599	\$3,287,138
Sundries.....	\$295,322,309	\$168,574,593	\$261,958,540	\$152,807,096	\$33,363,769	\$15,767,497
Net surplus.....	\$148,960,148	\$60,771,621	\$128,070,897	\$38,422,061	\$20,889,251	\$22,349,560
Salaried employees:						
Number.....	44,705	38,753	37,299	31,435	7,406	7,318
Salaries.....	\$46,566,869	\$32,681,482	\$39,940,809	\$27,004,837	\$6,626,060	\$5,676,645
Wage earners:						
Number ¹	199,785	144,608	161,401	110,468	38,384	34,140
Wages.....	\$123,088,197	\$63,359,059	\$104,974,058	\$49,896,524	\$18,114,139	\$13,462,535

¹ Number for 1917 is that employed on Sept. 29, for 1912 on Sept. 16.

The overwhelming predominance of the Bell Telephone System in all branches of the industry is clearly shown in the above table. Although the number of Bell exchanges only slightly exceeded that reported by the larger non-Bell organizations, the number of private-branch exchanges connected with the Bell System represented almost nine-tenths of the total for the country, the miles of wire constituted more than four-fifths of the total, and the number of telephones represented more than seven-tenths of the total. The annual revenue of the Bell System was

more than five times as much in 1917 as that reported by all of the larger non-Bell telephone systems combined. The assets were almost four times as much and the total dividends paid more than seven times as much as that reported by the "independent" organizations.

Table 22 shows, by geographic divisions and states, the number of telephones for 1917, 1912, and 1907, distinguishing the Bell System and all other systems, with the per cent each class formed of the total for each year.

Table 22

ALL SYSTEMS AND LINES—NUMBER OF TELEPHONES.

DIVISION AND STATE.	Total.			Bell Telephone System.			All other systems.			Per cent of total.					
	1917	1912	1907	1917	1912	1907	1917	1912	1907	Bell			All other		
										1917	1912	1907	1917	1912	1907
UNITED STATES.....	11,716,520	8,729,592	6,118,578	7,326,858	5,087,027	3,132,063	4,389,662	3,642,565	2,986,515	62.5	58.3	51.2	37.5	41.7	48.8
GEOGRAPHIC DIVISIONS:															
New England.....	878,354	625,488	410,269	827,407	580,097	366,531	50,947	45,391	43,738	94.2	92.7	89.3	5.8	7.3	10.7
Middle Atlantic.....	2,444,205	1,782,145	1,252,903	1,952,601	1,355,352	878,428	491,604	426,793	374,475	79.9	76.1	70.1	20.1	23.9	29.9
East North Central.....	3,158,989	2,378,257	1,712,390	1,714,650	1,159,303	702,746	1,444,339	1,218,954	1,009,644	54.3	48.7	41.0	45.7	51.3	59.0
West North Central.....	2,119,735	1,621,523	1,251,555	781,254	519,069	297,432	1,338,481	1,102,454	954,123	36.9	32.0	23.8	63.1	68.0	76.2
South Atlantic.....	739,631	531,402	365,764	500,697	340,227	209,308	238,934	191,175	156,456	67.7	64.0	57.2	32.3	36.0	42.8
East South Central.....	436,853	337,292	243,234	222,109	184,355	137,128	214,744	152,937	106,106	50.8	54.7	56.4	49.2	45.3	43.6
West South Central.....	740,004	543,102	342,255	376,900	283,681	157,080	363,104	259,421	185,175	50.9	52.2	45.9	49.1	47.8	54.1
Mountain.....	307,627	226,652	154,061	257,653	177,617	115,115	49,974	49,035	38,946	83.8	78.4	74.7	16.2	21.6	25.3
Pacific.....	891,122	683,731	386,147	693,587	487,326	268,295	197,535	196,405	117,852	77.8	71.3	69.5	22.2	28.7	30.5
NEW ENGLAND:															
Maine.....	88,226	68,914	53,134	69,471	52,564	37,110	18,755	16,350	16,024	78.7	76.3	69.8	21.3	23.7	30.2
New Hampshire.....	52,534	40,017	28,920	45,913	33,387	22,432	6,621	6,630	6,488	87.4	83.4	77.6	12.6	16.6	22.4
Vermont.....	47,968	40,142	30,833	29,105	23,813	16,916	18,863	16,324	13,917	60.7	59.3	54.9	39.3	40.7	45.1
Massachusetts.....	475,231	329,992	209,383	470,174	325,186	204,059	5,057	4,806	5,324	98.9	98.5	97.5	1.1	1.5	2.5
Rhode Island.....	64,726	41,664	24,099	64,726	41,664	23,929			170	100.0	100.0	99.3			0.7
Connecticut.....	149,669	104,759	63,900	148,018	103,478	62,085	1,651	1,281	1,815	98.9	98.8	97.2	1.1	1.2	2.8
MIDDLE ATLANTIC:															
New York.....	1,335,055	970,449	685,512	1,159,659	809,635	504,753	175,396	160,814	180,759	86.9	83.4	73.6	13.1	16.6	26.4
New Jersey.....	254,444	185,632	116,988	238,172	161,037	97,854	16,272	24,595	19,134	93.6	86.8	83.6	6.4	13.2	16.4
Pennsylvania.....	854,706	626,064	450,403	554,770	384,680	275,821	299,936	241,384	174,582	64.9	61.4	61.2	35.1	38.6	37.8
EAST NORTH CENTRAL:															
Ohio.....	845,649	631,206	495,636	381,677	251,116	183,358	463,972	380,090	312,278	45.1	39.8	37.0	54.9	60.2	63.0
Indiana.....	458,992	354,550	289,452	176,769	117,897	72,462	282,223	236,653	216,990	38.5	33.3	25.0	61.5	66.7	75.0
Illinois.....	1,070,997	807,253	558,585	725,767	473,799	273,263	345,230	333,454	285,322	67.8	58.7	48.9	32.2	41.3	51.1
Michigan.....	434,128	335,074	209,842	260,711	193,599	103,793	173,417	141,475	106,049	60.1	57.8	49.5	39.9	42.2	50.5
Wisconsin.....	349,223	250,174	158,875	169,726	122,892	69,870	179,497	127,282	89,005	48.6	49.1	44.0	51.4	50.9	56.0
WEST NORTH CENTRAL:															
Minnesota.....	408,222	272,359	171,479	173,696	99,093	56,861	234,526	173,266	114,618	42.5	36.4	33.2	57.5	63.6	66.8
Iowa.....	489,432	380,294	332,545	195,295	116,813	52,772	294,137	263,481	279,773	39.9	30.7	15.9	60.1	69.3	84.1
Missouri.....	511,246	404,150	312,527	176,124	140,239	91,704	335,122	263,911	220,823	34.4	34.7	29.3	65.6	65.3	70.7
North Dakota.....	75,349	51,241	34,087	28,647	17,328	7,452	46,702	33,913	26,635	38.0	33.8	21.9	62.0	66.2	78.1
South Dakota.....	88,946	65,858	48,405	13,059	7,836	3,654	75,887	58,022	44,751	14.7	11.9	7.5	85.3	88.1	92.5
Nebraska.....	248,267	201,689	152,279	83,992	62,246	46,669	164,275	139,443	105,610	33.8	30.9	30.6	66.2	69.1	69.4
Kansas.....	298,273	245,932	200,233	110,441	75,514	38,320	187,832	170,418	161,913	37.0	30.7	19.1	63.0	69.3	80.9
SOUTH ATLANTIC:															
Delaware.....	22,222	15,842	12,627	19,231	12,648	10,209	2,991	3,194	2,418	86.5	79.8	80.9	13.5	20.2	19.1
Maryland.....	118,397	84,801	66,323	114,769	79,410	48,845	3,628	5,391	17,478	96.9	93.6	73.6	3.1	6.4	26.4
District of Columbia.....	70,751	46,603	31,332	70,751	46,603	31,332				100.0	100.0	100.0			
Virginia.....	119,597	76,652	55,541	74,845	47,497	31,423	44,752	29,155	24,118	62.6	62.3	56.6	37.4	37.7	43.4
West Virginia.....	99,530	80,251	62,144	53,631	27,593	15,535	45,899	52,658	46,609	53.9	34.4	25.0	46.1	65.6	75.0
North Carolina.....	91,928	65,152	37,104	40,374	27,951	16,507	51,554	37,201	20,597	43.9	42.9	44.5	56.1	57.1	55.5
South Carolina.....	43,716	33,239	20,911	27,126	20,926	13,039	16,590	12,313	7,872	62.1	63.0	62.4	37.9	37.0	37.6
Georgia.....	124,479	96,436	62,260	79,016	64,052	36,056	45,463	32,384	26,204	63.5	66.4	57.9	36.5	33.6	42.1
Florida.....	49,011	32,426	17,522	20,954	13,547	6,362	28,057	18,879	11,160	42.8	41.8	36.3	57.2	58.2	63.7
EAST SOUTH CENTRAL:															
Kentucky.....	162,843	130,751	98,996	61,551	51,185	42,200	101,292	79,566	51,796	37.8	39.1	44.9	62.2	60.9	55.1
Tennessee.....	140,669	104,353	71,130	77,984	62,194	45,372	62,685	42,159	25,758	55.4	59.6	63.8	44.6	40.4	36.2
Alabama.....	76,698	56,292	40,481	47,440	39,233	25,496	29,253	17,059	14,985	61.9	69.7	63.0	38.1	30.3	37.0
Mississippi.....	56,648	45,896	37,627	35,134	31,743	24,060	21,514	14,153	13,567	62.0	69.2	63.9	38.0	30.8	36.1
WEST SOUTH CENTRAL:															
Arkansas.....	87,872	68,303	49,576	41,986	37,658	17,426	45,886	30,645	32,150	47.8	55.1	35.2	52.2	44.9	64.8
Louisiana.....	63,890	46,602	35,692	54,014	41,803	29,508	9,876	4,799	6,184	84.5	89.7	82.7	15.5	10.3	17.3
Oklahoma.....	176,835	116,217	68,125	89,047	55,339	30,116	87,788	60,878	38,009	50.4	47.6	44.2	49.6	52.4	55.8
Texas.....	411,407	311,980	188,862	191,853	148,881	80,030	219,554	163,099	108,832	46.6	47.7	42.4	53.4	52.3	57.6
MOUNTAIN:															
Montana.....	51,409	35,537	17,168	41,117	16,180	9,050	10,292	19,357	8,118	80.0	45.5	52.7	20.0	54.5	47.3
Idaho.....	37,204	29,454	16,394	26,455	17,560	10,640	10,749	11,894	5,754	71.1	59.6	64.9	28.9	40.4	35.1
Wyoming.....	15,774	9,946	6,699	11,879	7,471	5,331	3,895	2,475	1,368	75.3	75.1	79.6	24.7	24.9	20.4
Colorado.....	114,364	90,397	65,908	105,539	84,626	61,435	8,825	5,771	4,473	92.3	93.6	93.2	7.7	6.4	6.8
New Mexico.....	15,314	10,346	6,653	11,310	8,482	3,177	4,004	1,864	3,476	73.9	82.0	47.8	26.1	18.0	52.2
Arizona.....	18,225	11,224	6,203	15,825	9,802	3,055	2,400	1,422	3,148	86.8	82.0	49.3	13.2	18.0	50.7
Utah.....	46,621	34,064	30,435	41,814	30,971	19,907	4,807	3,093	10,528	89.7	90.9	65.4	10.3	9.1	34.6
Nevada.....	8,716	5,684	4,601	3,714	2,525	2,520	5,002	3,159	2,081	42.6	44.4	54.8	57.4	55.6	45.2
PACIFIC:															
Washington.....	188,407	150,016	98,846	130,235	106,151	63,194	58,172	43,865	35,652	69.1	70.8	63.9	30.9	29.2	36.1
Oregon.....	125,660	99,713	49,629	75,631	58,030	33,406	50,029	41,683	16,223	60.2	58.2	67.3	39.8	41.8	32.7
California.....	577,055	434,002	237,672	487,741	323,145	171,695	89,334	110,857	65,977	84.5	74.5	72.2	15.5	25.5	27.8

The Bell System represented in 1917 more than half the telephones in all the states except 16, 7 of these being the states which comprise the West North Central division. No non-Bell systems were reported for Rhode Island or for the District of Columbia. Of the other states, the Bell System reported more than 90 per cent of the telephones in Colorado, Con-

necticut, Maryland, Massachusetts, and New Jersey; and 80 per cent or more of the telephones in Arizona, California, Delaware, Louisiana, Montana, New Hampshire, New York, and Utah. The Bell System has reported a larger percentage of the total number of telephones for the country as a whole and for a majority of the separate

states at each successive census period. Only 16 of the states disclosed a smaller percentage of telephones under the control of the Bell System in 1917 than in 1912, and in only 10 of the states was the percentage of telephones controlled by the Bell System smaller in 1917 than in 1907. Practically every one of the important manufacturing and agricultural states of the East and Middle West shows a steady increase in the proportion which the telephones controlled by the Bell System constitute of the total for the state and a corresponding decrease in the proportion of telephones controlled by all other systems. In a few states the increase in the proportion of the telephones controlled by the Bell System was particularly marked. In Montana, for example, the Bell Telephone System controlled less than half the telephones reported in 1912, while in 1917 it controlled four-fifths of them. In California, Idaho, Illinois, Iowa, and West Virginia the proportion of telephones controlled by the Bell System was much greater in 1917 than in 1912. In some cases these increases were due to the consolidation with the Bell System of companies formerly under other ownership. In other cases the advance was due to the much more rapid expansion of the Bell System than that of the other systems.

No decreases in the number of telephones reported by the Bell System are recorded in any state for the decade 1907 to 1917 or for either of the five-year periods comprising it. A number of the states, however, show decreases for the decade in the number of telephones reported by the other systems, some of these decreases being particularly noticeable, as for example, those in Arizona, Maryland, and Utah.

Telephones connected with the Bell System.—The census schedule used in 1912 contained an inquiry designed to determine the number of telephones on the wires of non-Bell companies that were connected with the Bell Telephone System for the exchange of traffic. So many telephones secured Bell service indirectly, however, that it was found practically

impossible to obtain an accurate answer to this inquiry from the non-Bell companies, the data secured from them being at considerable variance with the number of such telephones which were reported by the Bell Telephone System as connected with its exchanges for telephone service. As the Bell System has better facilities for securing accurate data of this character, the inquiry regarding this information was omitted from the schedule for 1917 and the figures furnished by the Bell Company for 1912 and 1917 are used in this discussion. The Bell Telephone System reported in 1917 that in addition to the 7,326,858 Bell-owned telephones there were 3,164,902 telephones of all other systems which were connected with Bell lines and exchanges for the interchange of local and long-distance service, making a total of 10,491,760 telephones. Although the 3,164,902 connected telephones were neither Bell owned nor Bell controlled they should be reckoned as a part of the Bell System when considering the scope of the service afforded by the American Telephone & Telegraph Co. and its associated companies. In 1912, in addition to the 5,087,027 Bell-owned telephones, there were 2,369,047 independently owned telephones which either directly or indirectly secured Bell service connections. In other words, there were only 1,224,760 telephones, or 10.5 per cent of the total telephones in the country, in 1917, and 1,273,518 telephones, or 14.6 per cent of the total, in 1912, which had no opportunity to secure the benefits afforded by physical connection with the Bell Telephone System.

Miles of wire.—Table 23 shows, by geographic divisions and states, the number of miles of wire reported by the Bell Telephone System and by all other systems at the censuses of 1917 and 1912. The table also shows the per cent which the number of miles of wire reported by the Bell System and that reported by the other systems constituted of the total for each state at each census year, and also the per cent of increase for the five-year period, 1912 to 1917 for the Bell and for all other systems.

Table 23

ALL SYSTEMS AND LINES—MILES OF WIRE.

DIVISION AND STATE.	Total.		Bell Telephone System.		All other systems.		Per cent of total.				Per cent of increase: ¹ 1912-1917.	
							Bell.		All other.		Bell.	All other.
	1917	1912	1917	1912	1917	1912	1917	1912	1917	1912		
UNITED STATES.....	28,827,188	20,248,326	23,133,718	15,133,186	5,693,470	5,115,140	80.2	74.7	19.8	25.3	52.9	11.3
GEOGRAPHIC DIVISIONS:												
New England.....	2,383,580	1,545,252	2,333,679	1,498,417	49,901	46,835	97.9	97.0	2.1	3.0	55.7	6.5
Middle Atlantic.....	7,338,055	5,035,019	6,588,839	4,227,908	749,216	807,111	89.8	84.0	10.2	16.0	55.8	-7.2
East North Central.....	7,137,419	4,645,218	5,317,369	3,006,320	1,820,050	1,638,898	74.5	64.7	25.5	35.3	76.9	11.0
West North Central.....	3,934,372	2,932,578	2,291,458	1,636,056	1,642,914	1,296,522	58.2	55.8	41.8	44.2	40.0	26.7
South Atlantic.....	1,735,286	1,121,458	1,438,272	886,897	297,014	234,561	82.9	79.1	17.1	20.9	62.2	26.6
East South Central.....	1,107,025	977,694	808,030	662,218	298,995	315,476	73.0	67.7	27.0	32.3	22.0	-5.2
West South Central.....	1,912,756	1,312,553	1,471,474	971,439	441,282	341,114	76.9	74.0	23.1	26.0	51.5	29.4
Mountain.....	725,512	558,450	660,211	498,564	65,301	59,886	91.0	89.3	9.0	10.7	32.4	9.0
Pacific.....	2,553,183	2,120,104	2,224,386	1,745,367	328,797	374,737	87.1	82.3	12.9	17.7	27.4	-12.3
NEW ENGLAND:												
Maine.....	176,983	141,687	159,658	124,749	17,325	16,938	90.2	88.0	9.8	12.0	28.0	2.3
New Hampshire.....	110,691	75,917	102,702	69,686	7,989	6,231	92.8	91.8	7.2	8.2	47.4	28.2
Vermont.....	67,355	54,756	52,078	41,503	15,277	13,253	77.3	75.8	22.7	24.2	25.5	15.3
Massachusetts.....	1,353,251	863,426	1,346,082	854,894	7,169	8,532	99.5	99.0	0.5	1.0	57.4	-16.0
Rhode Island.....	161,075	102,906	161,075	102,906			100.0	100.0			56.5	
Connecticut.....	514,225	306,560	512,084	304,679	2,141	1,881	99.6	99.4	0.4	0.6	68.1	13.8
MIDDLE ATLANTIC:												
New York.....	4,154,657	2,790,060	3,893,741	2,565,015	260,916	225,045	93.7	91.9	6.3	8.1	51.8	15.9
New Jersey.....	1,002,075	644,984	974,525	579,281	27,550	65,703	97.2	89.8	2.7	10.2	68.2	-58.1
Pennsylvania.....	2,181,323	1,599,975	1,720,573	1,083,612	460,750	516,363	78.9	67.7	21.1	32.3	58.8	-10.8
EAST NORTH CENTRAL:												
Ohio.....	1,906,635	1,161,032	1,200,538	623,307	706,097	537,725	63.0	53.7	37.0	46.3	92.6	31.3
Indiana.....	933,261	667,839	608,998	378,492	324,263	289,347	65.3	56.7	34.7	43.3	60.9	12.1
Illinois.....	2,564,910	1,689,074	2,205,636	1,204,666	359,274	484,408	86.0	71.3	14.0	28.7	83.1	-25.8
Michigan.....	1,072,651	728,184	810,646	524,172	262,005	204,012	75.6	72.0	24.4	28.0	54.6	28.4
Wisconsin.....	659,962	399,089	491,551	275,683	168,411	123,406	74.5	69.1	25.5	30.9	78.3	36.5
WEST NORTH CENTRAL:												
Minnesota.....	1,058,989	653,479	634,589	373,733	424,400	279,746	59.9	57.2	40.1	42.8	69.8	51.7
Iowa.....	650,513	504,101	455,309	296,784	195,204	207,317	70.0	58.9	30.0	41.1	53.4	-5.8
Missouri.....	1,119,048	874,334	597,286	492,739	521,762	381,595	53.4	56.4	46.6	43.6	21.2	36.7
North Dakota.....	105,820	76,174	59,499	43,180	46,321	32,994	56.2	56.7	43.8	43.3	37.8	40.4
South Dakota.....	104,208	73,921	26,097	17,177	78,111	56,744	25.0	23.2	75.0	76.8	51.9	37.6
Nebraska.....	448,807	393,319	229,041	195,615	219,766	197,704	51.0	49.7	49.0	50.3	17.1	11.2
Kansas.....	446,987	357,250	289,637	216,828	157,350	140,422	64.8	60.7	35.2	39.3	33.6	12.0
SOUTH ATLANTIC:												
Delaware.....	75,196	48,632	67,615	40,838	7,581	7,794	89.9	84.0	10.1	16.0	65.6	-2.7
Maryland.....	354,588	228,744	351,682	223,170	2,906	5,574	99.2	97.6	0.8	2.4	57.6	-47.9
District of Columbia.....	162,032	126,279	162,032	126,279			100.0	100.0			28.3	
Virginia.....	271,549	161,136	226,602	132,827	44,947	28,309	83.4	82.4	16.6	17.6	70.6	58.8
West Virginia.....	179,387	112,954	142,580	64,255	36,807	48,699	79.5	56.9	20.5	43.1	121.9	-24.4
North Carolina.....	148,348	109,110	90,150	65,356	58,198	43,754	60.8	59.9	39.2	40.1	37.9	33.0
South Carolina.....	97,916	73,712	81,718	58,848	16,198	14,864	83.4	79.8	16.5	20.2	38.9	9.0
Georgia.....	314,273	206,591	249,859	149,889	64,423	56,702	79.5	72.6	20.5	27.4	66.7	13.6
Florida.....	131,997	54,300	66,043	25,435	65,954	28,865	50.0	46.8	50.0	53.2	159.6	128.5
EAST SOUTH CENTRAL:												
Kentucky.....	386,107	352,544	211,603	199,151	174,504	153,393	54.8	56.5	45.2	43.5	6.2	13.8
Tennessee.....	368,678	287,685	299,697	232,979	68,981	54,706	81.3	81.0	18.7	19.0	28.6	26.1
Alabama.....	209,585	152,849	175,096	130,168	31,489	22,681	84.8	85.2	15.2	14.8	34.5	38.8
Mississippi.....	145,655	184,616	121,634	99,920	24,021	84,696	83.5	54.1	16.5	45.9	21.7	-71.6
WEST SOUTH CENTRAL:												
Arkansas.....	170,105	141,014	132,498	111,623	37,607	29,391	77.9	79.2	22.1	20.8	18.7	28.0
Louisiana.....	196,917	138,905	184,637	133,434	12,280	5,471	93.8	96.1	6.2	3.9	38.4	124.4
Oklahoma.....	334,533	211,175	269,750	160,576	64,783	50,599	80.6	76.0	19.4	24.0	68.0	28.0
Texas.....	1,211,201	821,459	884,589	565,806	326,612	255,653	73.0	68.9	27.0	31.1	56.3	27.8
MOUNTAIN:												
Montana.....	94,666	54,259	82,218	30,652	12,448	23,607	86.9	56.5	13.1	43.5	168.2	-47.3
Idaho.....	81,745	58,205	70,037	50,191	11,708	8,014	85.7	86.2	14.3	13.8	39.5	46.1
Wyoming.....	30,435	20,368	24,320	15,634	6,115	4,734	79.9	76.8	20.1	23.2	55.6	29.2
Colorado.....	312,326	261,987	299,655	253,518	12,671	8,469	95.9	96.8	4.1	3.2	18.2	49.6
New Mexico.....	31,963	22,492	25,762	19,648	6,201	2,844	80.6	87.4	19.4	12.6	31.1	118.0
Arizona.....	39,455	18,621	36,388	16,669	3,067	1,952	92.2	89.5	7.8	10.5	118.3	57.1
Utah.....	120,938	112,726	115,555	108,316	5,383	4,410	95.5	96.1	4.5	3.9	6.7	22.1
Nevada.....	13,984	9,792	6,276	3,936	7,708	5,856	44.9	40.2	55.1	59.8	59.4	31.6
PACIFIC:												
Washington.....	429,718	487,079	358,883	429,025	70,835	58,054	83.5	88.1	16.5	11.9	-16.4	22.0
Oregon.....	275,191	272,481	189,083	186,103	86,108	86,378	68.7	68.3	31.3	31.7	1.6	-0.3
California.....	1,848,274	1,360,544	1,676,420	1,130,239	171,854	230,305	90.7	83.1	9.3	16.9	48.3	-25.4

¹ A minus sign (-) denotes decrease.

The states in which the Bell Telephone System predominated most largely in number of telephones are in practically all cases the states in which it was most important in wire mileage. In Rhode Island and the District of Columbia the Bell System owned all the wire and telephones reported and in every other state in the Union the proportion

which the Bell wire mileage represented of the total wire mileage exceeded the proportion which the Bell telephones constituted of the total number of telephones. There were 12 states in which the Bell System reported more than nine-tenths of the total wire mileage and 12 other states in which the Bell wire constituted more than four-fifths of the total.

Exchange and toll circuits.—Table 24 shows the miles of wire for 1917 and 1912, classified as to overhead and underground and as to exchange and toll circuits, and distinguishes the Bell System and all other systems.

Percentages are also given showing the part of the total each class of wire constituted in each year and the per cent of increase from 1912 to 1917.

Table 24

ALL SYSTEMS AND LINES—MILES OF WIRE ON EXCHANGE AND TOLL CIRCUITS.

	Total.		Overhead.		Underground.		Per cent of total.				Per cent of increase: ¹ 1912-1917.		
	1917	1912	1917	1912	1917	1912	Overhead.		Underground.		Total.	Overhead.	Underground.
							1917	1912	1917	1912			
All circuits.....	28,827,188	20,248,326	13,978,008	11,083,338	14,849,180	9,164,988	48.5	54.7	51.5	45.3	42.4	26.1	62.0
Bell Telephone System..	23,133,718	15,133,186	9,503,860	7,163,108	13,629,858	7,970,078	41.1	47.3	58.9	52.7	52.9	32.9	71.0
All other systems.....	5,693,470	5,115,140	4,474,148	3,920,230	1,219,322	1,194,910	78.6	76.6	21.4	23.4	11.2	14.1	2.0
Exchange circuits.....	25,252,276	17,565,110	11,393,178	8,876,594	13,859,098	8,688,516	45.1	50.5	54.9	49.5	43.8	28.3	59.5
Bell Telephone System..	19,962,997	12,882,826	7,321,319	5,385,826	12,641,678	7,497,000	36.7	41.8	63.3	58.2	55.0	35.9	68.6
All other systems.....	5,289,279	4,682,284	4,071,859	3,490,768	1,217,420	1,191,516	77.0	74.6	23.0	25.4	12.9	16.6	2.2
Toll circuits.....	3,574,912	2,683,216	2,584,830	2,206,744	990,082	476,472	72.3	82.2	27.7	17.8	33.2	17.1	107.8
Bell Telephone System..	3,170,721	2,250,360	2,182,541	1,777,282	988,180	473,078	68.8	79.0	31.2	21.0	40.9	22.8	108.9
All other systems.....	404,191	432,856	402,289	429,462	1,902	3,394	99.5	99.2	0.5	0.8	-6.6	-6.3	-44.0

¹ A minus sign (—) denotes decrease.

² Includes 1,529,162 miles of wire in 1917, and 1,228,935 miles of wire in 1912, operated by systems reporting annual incomes of less than \$5,000, for which no segregation into "overhead" and "underground" was made.

The tendency to adopt underground circuits is becoming very general. The census of 1917 showed for the first time a greater proportion of the telephone wire underground than overhead. In 1912 more than half the wire reported by the Bell Telephone System was underground, but the proportion of underground wire reported by the other systems was so small that the total of the underground wire was reduced to considerably less than half of the total of all wire. The amount of underground wire reported by the non-Bell systems in 1917 was only slightly greater than that reported by these systems in 1912, and its proportion of the total of all wire reported by the non-Bell systems was actually less than in 1912. This is due in part to the fact that several large non-Bell systems in 1912 appear in the Bell totals in 1917. The large increase in underground wire reported by the Bell System more than made up the difference, so that underground wire in 1917 represented 51.5 per cent of the total telephone wire for the entire country.

As might naturally be expected, most of the underground wire is on the exchange circuits. The underground wire on toll circuits, however, is increasing both actually and relatively. The amount of underground wire on toll circuits was more than twice as great in 1917 as in 1912, and represented 27.7 per cent of the total wire on toll circuits in 1917, as compared

with 17.8 per cent five years earlier. Practically all of the underground wire on toll circuits was reported by the Bell Telephone System.

All of the wire reported by systems or lines having annual incomes of less than \$5,000 was classed as overhead wire on exchange circuits. Small amounts of this wire may have been underground or may have been overhead toll wire. No report was required from these small systems regarding the use of the wire (whether on exchange or toll circuits) or the location of the wire (whether overhead or underground). To the extent that these small lines or systems possessed any underground wire or used any of their wire for toll purposes, the statistics for overhead wire on exchange circuits as shown in Table 24 are overstated and those for toll wire and for underground wire on exchange circuits are understated. It is believed, however, that very little of the 1,529,162 miles of wire reported by these organizations in 1917 is other than overhead wire used for exchange purposes.

Messages or talks.—Table 25 presents the estimated number of local exchange and long-distance or toll messages for the Bell System and for all other systems, by geographic divisions and states, for 1917. The table also shows the percentage which each class of messages forms of the total for each group and the number of messages per telephone per day.

Table 25

ALL SYSTEMS AND LINES—ESTIMATED NUMBER OF MESSAGES OR TALKS: 1917.

DIVISION AND STATE.	Bell Telephone System.					All other systems.					Total per telephone per day. ¹	
	Total.	Local exchange.	Long-distance or toll.	Per cent of total.		Total.	Local exchange.	Long-distance or toll.	Per cent of total.		Bell.	All other.
				Lo-cal.	Long-dis-tance.				Lo-cal.	Long-dis-tance.		
UNITED STATES.....	14,597,567,869	14,236,304,195	361,263,674	97.5	2.5	7,248,154,466	7,166,468,146	81,686,320	98.9	1.1	6.1	5.1
GEOGRAPHIC DIVISIONS:												
New England.....	1,422,096,019	1,370,949,746	51,146,273	96.4	3.6	93,429,961	91,906,238	1,523,723	98.4	1.6	5.3	5.6
Middle Atlantic.....	3,048,376,143	2,891,274,327	157,101,816	94.8	5.2	830,187,523	816,498,890	13,688,633	98.4	1.6	4.8	5.2
East North Central.....	3,446,429,322	3,405,211,267	41,218,055	98.8	1.2	2,471,486,557	2,439,641,269	31,845,288	98.7	1.3	6.2	5.3
West North Central.....	1,769,059,036	1,744,700,720	24,358,316	98.6	1.4	2,020,111,063	2,001,909,076	18,201,987	99.1	0.9	7.0	4.6
South Atlantic.....	1,162,389,682	1,140,222,035	22,167,647	98.1	1.9	410,440,093	407,180,890	3,259,203	99.2	0.8	7.1	5.3
East South Central.....	712,419,551	703,526,224	8,893,327	98.8	1.2	396,717,939	394,341,067	2,376,872	99.4	0.6	9.9	5.7
West South Central.....	1,215,128,814	1,196,817,446	18,311,368	98.5	1.5	604,688,151	598,956,903	5,731,248	99.1	0.9	9.9	5.1
Mountain.....	470,358,992	460,077,634	10,281,358	97.8	2.2	64,453,870	63,545,438	908,432	98.6	1.4	5.6	4.0
Pacific.....	1,351,310,310	1,323,524,796	27,785,514	97.9	2.1	356,639,309	352,488,375	4,150,934	98.8	1.2	6.0	5.6
NEW ENGLAND:												
Maine.....	132,875,368	128,720,588	4,154,780	96.9	3.1	19,325,840	18,915,171	410,669	97.9	2.1	5.9	3.2
New Hampshire.....	76,609,860	73,788,576	2,821,284	96.3	3.7	15,058,263	14,992,223	66,040	99.6	0.4	5.1	7.0
Vermont.....	62,538,789	60,778,970	1,759,819	97.2	2.8	46,536,775	45,682,288	854,487	98.2	1.8	6.6	7.6
Massachusetts.....	790,769,936	762,902,223	27,867,713	96.5	3.5	10,059,024	9,947,365	111,659	98.9	1.1	5.2	6.1
Rhode Island.....	105,594,600	101,031,463	4,563,137	95.7	4.3						5.0	
Connecticut.....	253,707,466	243,727,926	9,979,540	96.1	3.9	2,450,059	2,369,191	80,868	96.7	3.3	5.3	4.6
MIDDLE ATLANTIC:												
New York.....	1,874,569,218	1,794,536,908	80,032,310	95.7	4.3	279,063,658	274,531,480	4,532,178	98.4	1.6	5.0	4.9
New Jersey.....	321,069,284	277,107,368	43,961,916	86.3	13.7	18,728,149	17,669,943	1,058,206	94.3	5.7	4.1	3.5
Pennsylvania.....	852,737,641	819,630,051	33,107,590	96.1	3.9	532,395,716	524,297,467	8,098,249	98.5	1.5	4.7	5.5
EAST NORTH CENTRAL:												
Ohio.....	811,133,362	803,645,994	7,487,368	99.1	0.9	934,467,484	923,986,580	10,480,904	98.9	1.1	6.5	6.2
Indiana.....	414,489,826	409,972,583	4,517,243	98.9	1.1	473,359,072	467,846,400	5,512,672	98.8	1.2	7.2	5.2
Illinois.....	1,284,045,272	1,265,650,880	18,394,392	98.6	1.4	519,281,833	510,792,479	8,489,354	98.4	1.6	5.4	4.6
Michigan.....	603,254,645	597,075,320	6,179,325	99.0	1.0	296,575,452	293,261,615	3,313,837	98.9	1.1	7.1	5.3
Wisconsin.....	333,506,217	328,866,490	4,639,727	98.6	1.4	247,802,716	243,754,195	4,048,521	98.4	1.6	6.0	4.2
WEST NORTH CENTRAL:												
Minnesota.....	400,759,906	395,007,670	5,752,236	98.6	1.4	328,319,823	324,658,542	3,661,281	98.9	1.1	7.1	4.3
Iowa.....	446,150,709	440,134,886	6,015,823	98.7	1.3	362,446,466	359,081,336	3,365,130	99.1	0.9	7.0	3.8
Missouri.....	414,275,775	409,351,435	4,924,340	98.8	1.2	588,765,103	584,753,113	4,011,990	99.3	0.7	7.2	5.4
North Dakota.....	49,267,738	48,052,682	1,215,056	97.5	2.5	60,128,262	59,333,997	794,265	98.7	1.3	5.3	4.0
South Dakota.....	23,726,233	23,194,510	531,723	97.8	2.2	102,847,760	101,369,946	1,477,814	98.6	1.4	5.6	4.2
Nebraska.....	193,880,250	191,742,044	2,138,206	98.9	1.1	297,276,764	294,147,950	3,128,814	98.9	1.1	7.1	5.6
Kansas.....	240,998,425	237,217,493	3,780,932	98.4	1.6	280,326,885	278,564,192	1,762,693	99.4	0.6	6.7	4.6
SOUTH ATLANTIC:												
Delaware.....	32,413,368	31,387,812	1,025,556	96.8	3.2	4,586,075	4,562,375	23,700	99.5	0.5	5.2	4.7
Maryland.....	182,336,086	173,176,750	9,159,336	95.0	5.0	3,898,200	3,880,200	18,000	99.5	0.5	4.9	3.3
District of Columbia.....	111,132,636	109,892,280	1,240,356	98.9	1.1						4.8	
Virginia.....	184,614,180	183,072,708	1,541,472	99.2	0.8	67,884,002	67,490,541	373,461	99.4	0.6	7.6	4.7
West Virginia.....	99,424,260	97,418,832	2,005,428	98.0	2.0	52,940,029	52,447,167	492,862	99.1	0.9	5.7	3.5
North Carolina.....	121,161,791	119,279,594	1,882,197	98.4	1.6	96,153,561	95,062,649	1,090,912	98.9	1.1	9.2	5.7
South Carolina.....	85,552,188	84,282,015	1,270,173	98.5	1.5	25,330,255	25,246,925	83,330	99.7	0.3	9.7	4.7
Georgia.....	270,448,698	267,049,826	3,398,867	98.7	1.3	87,175,542	86,611,202	564,340	99.4	0.6	10.5	5.9
Florida.....	75,306,480	74,662,218	644,262	99.1	0.9	72,492,429	71,879,831	612,598	99.2	0.8	11.1	8.0
EAST SOUTH CENTRAL:												
Kentucky.....	150,585,760	148,953,931	1,631,829	98.9	1.1	231,030,178	229,529,801	1,500,377	99.4	0.6	7.5	7.0
Tennessee.....	282,396,639	279,986,742	2,409,897	99.1	0.9	96,797,653	96,390,725	406,928	99.6	0.4	11.1	4.8
Alabama.....	162,491,571	160,580,375	1,911,196	98.8	1.2	36,601,874	36,185,166	416,708	98.9	1.1	10.5	3.8
Mississippi.....	116,945,581	114,005,176	2,940,405	97.5	2.5	32,288,234	32,235,375	52,859	99.8	0.2	10.2	4.6
WEST SOUTH CENTRAL:												
Arkansas.....	140,232,812	138,512,994	1,719,818	98.8	1.2	67,291,204	66,600,939	690,265	99.0	1.0	10.3	4.5
Louisiana.....	188,164,883	185,409,794	2,755,089	98.5	1.5	11,453,637	11,257,255	196,382	98.3	1.7	10.7	3.6
Oklahoma.....	278,700,444	273,125,760	5,574,684	98.0	2.0	125,366,726	124,297,411	1,069,315	99.1	0.9	9.6	4.4
Texas.....	608,030,675	599,768,898	8,261,777	98.6	1.4	400,576,584	396,801,298	3,775,286	99.1	0.9	9.8	5.6
MOUNTAIN:												
Montana.....	70,017,426	68,364,402	1,653,024	97.6	2.4	15,022,169	14,936,410	85,759	99.4	0.6	5.2	4.5
Idaho.....	50,415,840	49,117,920	1,297,920	97.4	2.6	9,550,695	9,451,445	99,250	99.0	1.0	5.9	2.7
Wyoming.....	27,339,564	26,836,800	502,764	98.2	1.8	4,704,410	4,676,335	28,075	99.4	0.6	7.1	3.7
Colorado.....	179,741,462	175,409,824	4,331,638	97.6	2.4	11,523,845	11,356,515	167,330	98.5	1.5	5.2	4.0
New Mexico.....	22,766,208	22,364,004	402,204	98.2	1.8	6,047,815	5,994,575	53,240	99.1	0.9	6.2	4.6
Arizona.....	18,393,972	17,891,208	502,764	97.3	2.7	3,529,482	3,400,550	128,932	96.3	3.7	3.6	4.5
Utah.....	95,437,104	93,928,812	1,508,292	98.4	1.6	7,237,133	7,106,877	130,256	98.2	1.8	7.0	4.6
Nevada.....	6,247,416	6,164,664	82,752	98.7	1.3	6,838,321	6,622,731	215,590	96.8	3.2	5.2	4.2
PACIFIC:												
Washington.....	269,790,654	266,727,999	3,062,655	98.9	1.1	84,356,341	83,347,186	1,009,155	98.8	1.2	6.4	4.5
Oregon.....	152,788,795	151,076,115	1,712,680	98.9	1.1	79,150,215	78,150,564	999,651	98.7	1.3	6.2	4.9
California.....	928,730,861	905,720,682	23,010,179	97.5	2.5	193,132,753	190,990,625	2,142,128	98.9	1.1	5.9	6.7

¹ Computed on the basis of 325 days to the year.

Although the number of toll messages in 1917 represented only 2.2 per cent of the total number of calls for systems reporting annual incomes of \$5,000 or more (see Table 16), the toll calls reported by the Bell System represented 2.5 per cent of the total for the

Bell System, while the toll calls reported by the other systems represented only 1.1 per cent of the total calls reported by these systems. In considering these figures reference should be made to the defect inherent in the statistics of messages, described on page 24.

Public exchanges.—In addition to the number of telephones and the miles of wire, the number of public exchanges or central offices is a significant index of the importance of the telephone industry. Table 26 presents, by geographic divisions and states, for 1917, 1912, 1907, and 1902, the numbers of public exchanges

distinguishing the Bell System and all other systems and further showing separately for all other systems those reporting annual incomes of \$5,000 or more and less than \$5,000, for each year for which this segregation can be made.

Table 26

ALL SYSTEMS AND LINES—NUMBER OF PUBLIC EXCHANGES.

DIVISION AND STATE.	Total.				Bell Telephone System.				All other systems.									
	1917	1912 ¹	1907	1902	1917	1912	1907	1902	Total.				Reporting annual incomes of \$5,000 or more.			Reporting annual incomes of less than \$5,000.		
									1917	1912 ¹	1907	1902	1917	1912	1907	1917 ²	1907	
UNITED STATES.....	21,175	11,515	15,527	10,361	6,288	5,853	5,418	3,753	14,887	5,662	10,109	6,608	6,006	5,662	5,195	8,881	4,914	
GEOGRAPHIC DIVISIONS:																		
New England.....	910	731	912	599	633	625	643	473	277	106	269	126	137	106	89	140	180	
Middle Atlantic.....	2,410	1,862	2,137	1,731	1,011	1,001	938	946	1,399	861	1,199	785	886	861	749	513	450	
East North Central.....	4,846	2,858	4,014	3,143	942	967	971	699	3,904	1,891	3,043	2,444	1,996	1,891	1,744	1,908	1,299	
West North Central.....	5,007	2,209	3,408	2,069	838	640	460	245	4,169	1,569	2,948	1,824	1,611	1,569	1,461	2,558	1,487	
South Atlantic.....	1,886	783	1,241	791	586	464	406	138	1,300	319	835	653	349	319	293	951	542	
East South Central.....	1,673	746	915	525	569	553	509	286	1,104	193	406	239	199	193	193	905	213	
West South Central.....	2,425	948	1,389	619	619	600	409	186	1,806	348	980	433	423	348	407	1,383	573	
Mountain.....	772	504	513	250	428	397	318	184	344	107	195	66	134	107	117	210	78	
Pacific.....	1,246	874	998	634	662	606	764	596	584	268	234	38	271	268	142	313	92	
NEW ENGLAND:																		
Maine.....	244	167	243	112	128	126	158	80	116	41	85	32	47	41	34	69	51	
New Hampshire.....	133	98	139	87	94	87	101	75	39	11	38	12	17	11	5	22	33	
Vermont.....	147	107	167	103	49	61	53	39	98	46	114	64	61	46	38	37	76	
Massachusetts.....	275	257	274	233	257	253	250	221	18	4	24	12	9	4	9	9	15	
Rhode Island.....	28	29	25		28	29	25											
Connecticut.....	83	73	64	64	77	69	56	58	6	4	8	6	3	4	3	3	5	
MIDDLE ATLANTIC:																		
New York.....	970	705	896	713	459	476	414	408	511	229	482	305	262	229	271	249	211	
New Jersey.....	193	186	222	246	144	137	144	175	49	49	78	71	39	49	51	10	27	
Pennsylvania.....	1,247	971	1,019	772	408	388	380	363	839	583	639	409	585	583	427	254	212	
EAST NORTH CENTRAL:																		
Ohio.....	1,173	802	1,039	757	220	234	259	158	953	568	780	599	597	568	546	356	234	
Indiana.....	958	484	796	621	144	160	163	91	814	324	633	530	332	324	300	482	333	
Illinois.....	1,362	772	1,137	912	268	237	242	177	1,094	535	895	735	528	535	511	566	384	
Michigan.....	710	501	604	511	209	232	217	185	501	269	387	326	285	269	255	216	132	
Wisconsin.....	643	299	438	342	101	104	90	88	542	195	348	254	254	195	132	288	216	
WEST NORTH CENTRAL:																		
Minnesota.....	729	363	453	246	123	112	91	23	606	251	362	223	285	251	185	321	177	
Iowa.....	1,129	442	751	710	214	128	73	68	915	314	678	642	261	314	367	654	311	
Missouri.....	1,015	379	650	482	113	119	91	41	902	260	559	441	277	260	222	625	337	
North Dakota.....	385	171	212	49	110	59	22	4	275	112	190	45	116	112	91	159	99	
South Dakota.....	339	186	255	103	41	29	10	9	298	157	245	94	172	157	157	126	88	
Nebraska.....	561	363	507	220	104	97	98	77	457	266	409	143	272	266	256	185	153	
Kansas.....	849	305	580	259	133	96	75	23	716	209	505	236	228	209	183	488	322	
SOUTH ATLANTIC:																		
Delaware.....	23	19	18		22	18	18		1	1			1	1	1			
Maryland.....	134	109	154	114	122	88	98	34	12	21		56	2	21	34	10	21	
District of Columbia.....	7	7	6		7	7	6											
Virginia.....	337	108	209	139	76	54	43	14	261	54	166	125	68	54	34	193	132	
West Virginia.....	314	139	284	180	81	55	48	27	233	84	236	153	47	84	123	186	113	
North Carolina.....	345	115	198	125	71	65	50	7	274	50	148	118	70	50	20	204	128	
South Carolina.....	175	65	107	82	58	52	54	15	117	13	53	67	13	13	12	104	41	
Georgia.....	421	169	198	113	125	115	81	33	296	54	117	80	94	54	48	202	69	
Florida.....	130	52	67	38	24	10	8	8	106	42	59	30	54	42	21	52	38	
EAST SOUTH CENTRAL:																		
Kentucky.....	572	278	342	203	181	175	166	96	391	103	176	107	115	103	89	276	87	
Tennessee.....	508	221	261	158	167	163	144	95	341	58	117	63	48	58	64	293	53	
Alabama.....	283	91	135	69	86	81	83	31	197	10	52	38	21	10	19	176	33	
Mississippi.....	310	156	177	95	135	134	116	64	175	22	61	31	15	22	21	160	40	
WEST SOUTH CENTRAL:																		
Arkansas.....	368	138	241	123	99	100	42	19	269	38	199	104	51	38	87	218	112	
Louisiana.....	170	113	105	60	104	106	63	45	66	7	42	15	19	7	22	47	20	
Oklahoma.....	594	175	294	102	149	115	111	4	445	60	183	98	77	60	46	368	137	
Texas.....	1,293	522	749	334	267	279	193	118	1,026	243	556	216	276	243	252	750	304	
MOUNTAIN:																		
Montana.....	132	92	54	32	77	47	32	19	55	45	22	13	13	45	13	42	9	
Idaho.....	139	84	100	33	64	68	51	28	75	16	49	5	34	16	38	41	11	
Wyoming.....	61	25	50		24	25	19		37				7			30		
Utah.....	75	49	46	36	38	40	46	35	37	9		31	20	9	15	17		
Colorado.....	208	164	158	96	158	158	130	80	50	6	28	16	8	6	14	42	14	
New Mexico.....	65	31	41	12	28	27	15	2	37	4	26	10	12	4	11	25	15	
Arizona.....	55	32	38	30	32	27	14	12	23	5	24	18	15	5	14	8	10	
Nevada.....	37	27	26	11	7	5	11	8	30	22	15	3	25	22	12	5	3	
PACIFIC:																		
Washington.....	308	211	247	140	112	119	173	135	196	92	74	5	78	92	50	118	24	
Oregon.....	269	122	206	118	89	77	155	99	180	45	51	19	60	45	20	120	31	
California.....	669	541	545	376	461	410	436	362	208	131	109	14	133	131	72	75	37	

¹ Not reported for systems having incomes of less than \$5,000.² Number of systems reporting exchanges, actual number of exchanges not reported.

The total number of public exchanges reported at each of the last three census periods has been about the same for the Bell Telephone System and the independent systems reporting annual incomes of \$5,000 or more. A larger number of telephone exchanges, however, than reported by either the Bell or the larger non-Bell systems was operated by the small systems (those having annual incomes of less than \$5,000); 8,881 of these systems reported that they operated exchanges in 1917. As explained elsewhere, these small systems were not required to report the number of exchanges that they operated; consequently, the actual number of exchanges operated by such systems is undoubtedly somewhat larger than 8,881. No statistics regarding the number of exchanges operated by the small telephone systems were obtained in 1912, but in 1907 the number of such exchanges was smaller than that reported either by the Bell Telephone System or by the larger non-Bell systems. In other words, the increase in the number of telephone exchanges in the country has been considerably more rapid during the decade 1907 to 1917 for the small systems than for either the Bell Telephone System or the large non-Bell systems.

A comparison, by geographic divisions, of the number of exchanges reported by the Bell System in 1917 with the number reported by all other systems shows that the number of Bell exchanges exceeded the number of all other exchanges in New England and in the Mountain and Pacific divisions. Only one of the New England states, Vermont, showed a larger number of non-Bell exchanges than of Bell exchanges, and in this state the number of Bell exchanges considerably decreased during the five-year period 1912 to 1917. In only nine of the remaining states was the number of Bell exchanges in excess of the number of exchanges

operated by non-Bell organizations. The states outside New England in which this condition prevails were: Arizona, California, Colorado, Delaware, Louisiana, Maryland, Montana, New Jersey, and Utah. No non-Bell exchanges existed either in the District of Columbia or in Rhode Island.

A public exchange or central office may contain a small switchboard where only a few lines connect or may be an extensive office affording communication between thousands of subscribers; therefore, the number if not accompanied by information in regard to the size of the exchanges has little significance, but the relative importance of the exchanges in the different states can be approximated by comparing their number with the number of telephones.

Private-branch exchanges.—While the number of private-branch exchanges depends upon local conditions and is determined by factors entirely different from those governing the establishment of public exchanges the numbers of private-branch exchanges reported by the Bell and other systems at the different censuses are of interest. Data of this nature are shown in Table 27. The Bell System reported by far the greater number of private-branch exchanges—nine-tenths of the total in 1917, more than four-fifths in 1912, and more than five-sixths in 1907. As this system operates in the larger cities where many private-branch exchanges are necessary and the non-Bell systems more largely in the smaller cities and towns where few are required, the reason for this preponderance is apparent. The Bell System had private-branch exchanges in every state at each of the last three censuses but no non-Bell exchanges of this character were reported for a number of the states or for the District of Columbia at these censuses.

ELECTRICAL INDUSTRIES: 1917.

Table 27

SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—NUMBER OF PRIVATE-BRANCH EXCHANGES.

DIVISION AND STATE.	Total.				Bell Telephone System.			All other systems.			Per cent of increase. ¹						
											Total.			Bell Telephone Systems.		All other systems.	
	1917	1912	1907	1902	1917	1912	1907	1917	1912	1907	1912-1917	1907-1912	1902-1907	1912-1917	1907-1912	1912-1917	1907-1912
UNITED STATES.....	80,914	52,651	28,276	7,883	72,253	45,387	24,702	8,661	7,264	3,574	53.7	86.2	258.7	59.2	83.7	19.2	103.2
GEOGRAPHIC DIVISIONS:																	
New England.....	6,887	4,855	2,361	506	6,880	4,824	2,357	7	31	4	41.8	105.6	366.6	42.6	104.7	.....	.....
Middle Atlantic.....	39,325	26,301	15,215	4,532	35,383	22,966	14,207	3,942	3,335	1,008	49.5	72.9	235.7	54.1	61.6	18.2	230.8
East North Central.....	14,847	8,014	4,108	1,489	13,157	6,560	3,323	1,690	1,454	785	85.3	95.1	175.9	100.6	97.4	16.2	85.2
West North Central.....	7,290	4,532	2,245	406	5,153	3,190	1,456	2,137	1,342	789	60.8	101.9	453.0	61.5	119.1	59.2	70.1
South Atlantic.....	3,395	2,073	1,129	415	3,331	1,997	975	64	76	154	63.8	83.6	172.0	66.8	104.8	.....	-50.6
East South Central.....	926	633	537	111	495	393	325	431	240	212	46.3	17.9	383.8	26.0	20.9	79.6	13.2
West South Central.....	1,341	776	316	36	1,208	721	288	133	55	28	72.8	145.6	.....	67.5	150.3	.....	.....
Mountain.....	1,276	862	341	33	1,267	832	284	9	30	57	48.0	152.8	.....	52.3	193.0	.....	.....
Pacific.....	5,627	4,605	2,024	355	5,379	3,904	1,487	248	701	537	22.2	127.5	470.1	37.8	162.5	-64.6	30.5
NEW ENGLAND:																	
Maine.....	277	199	67	1	275	171	66	2	28	1	39.2	.....	.....	60.8	.....	.....	.....
New Hampshire.....	123	65	19	1	123	65	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont.....	75	49	22	1	70	47	19	5	2	3	.....	.....	.....	.....	.....	.....	.....
Massachusetts.....	4,714	3,451	1,793	408	4,714	3,450	1,793	.....	1	.....	36.6	92.5	339.5	36.6	92.4	.....	.....
Rhode Island.....	587	338	153	95	587	338	153	.....	.....	.....	73.7	120.9	.....	73.7	120.9	.....	.....
Connecticut.....	1,111	753	307	.....	1,111	753	307	.....	.....	.....	47.5	145.3	.....	47.5	145.3	.....	.....
MIDDLE ATLANTIC:																	
New York.....	28,868	19,311	11,193	3,807	26,847	17,152	10,865	2,021	2,159	328	49.5	72.5	194.0	56.5	57.9	-6.4	558.2
New Jersey.....	2,823	1,906	610	141	2,755	1,834	568	68	72	42	48.1	212.4	332.6	50.2	222.9	.....	.....
Pennsylvania.....	7,634	5,084	3,412	584	5,781	3,980	2,774	1,853	1,104	638	50.2	49.0	484.2	45.3	43.5	67.8	73.0
EAST NORTH CENTRAL:																	
Ohio.....	3,894	2,099	1,338	447	2,968	1,445	868	926	654	470	85.5	56.9	199.3	105.4	66.5	41.6	39.1
Indiana.....	1,070	536	277	84	781	307	170	289	229	107	99.6	93.5	.....	154.4	80.6	26.2	114.0
Illinois.....	6,531	4,008	1,753	771	6,381	3,580	1,673	150	428	80	62.9	128.6	127.4	78.2	114.0	-65.0	.....
Michigan.....	2,062	1,009	517	115	1,842	899	425	220	110	92	104.4	95.2	349.6	104.9	111.5	100.0	.....
Wisconsin.....	1,290	362	223	72	1,185	329	187	105	33	36	256.4	62.3	.....	260.2	75.9	.....	.....
WEST NORTH CENTRAL:																	
Minnesota.....	1,934	1,133	853	208	1,446	531	438	488	602	415	70.7	32.8	310.1	172.3	21.2	-18.9	45.1
Iowa.....	928	613	151	6	904	550	92	24	63	59	51.4	306.0	.....	64.4	.....	.....	.....
Missouri.....	3,472	2,012	943	174	1,993	1,435	686	1,479	577	257	72.6	113.4	442.0	38.9	109.2	156.3	124.5
North Dakota.....	109	57	30	.....	108	55	23	1	2	7	.....	.....	.....	.....	.....	.....	.....
South Dakota.....	70	20	1	.....	68	20	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nebraska.....	601	437	183	17	466	351	165	135	86	18	37.5	138.8	.....	32.8	112.7	.....	.....
Kansas.....	176	260	84	1	168	248	51	8	2	33	-32.3	.....	.....	-32.3	.....	.....	.....
SOUTH ATLANTIC:																	
Delaware.....	203	82	66	.....	203	82	66	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland.....	1,270	783	433	373	1,270	783	340	.....	.....	93	62.2	80.8	.....	62.2	130.3	.....	.....
District of Columbia.....	1,011	710	368	.....	1,011	710	368	.....	.....	.....	42.4	92.9	.....	42.4	92.9	.....	.....
Virginia.....	229	118	74	8	221	117	71	8	1	3	94.1	.....	.....	88.9	.....	.....	.....
West Virginia.....	205	109	63	17	195	62	32	10	47	31	88.1	.....	.....	.....	.....	.....	.....
North Carolina.....	90	37	17	.....	80	34	16	10	3	1	.....	.....	.....	.....	.....	.....	.....
South Carolina.....	46	14	15	6	46	13	13	.....	1	2	.....	.....	.....	.....	.....	.....	.....
Georgia.....	275	188	74	11	263	167	65	12	21	9	46.3	.....	.....	57.5	.....	.....	.....
Florida.....	66	32	19	.....	42	29	4	24	3	15	.....	.....	.....	.....	.....	.....	.....
EAST SOUTH CENTRAL:																	
Kentucky.....	577	357	329	92	173	136	148	401	221	181	61.6	8.5	.....	27.2	-8.1	82.8	22.1
Tennessee.....	218	164	154	16	191	153	130	27	11	24	32.9	6.5	.....	24.8	17.7	.....	.....
Alabama.....	110	87	46	3	110	81	39	.....	6	7	.....	.....	.....	.....	.....	.....	.....
Mississippi.....	21	25	8	.....	21	23	8	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
WEST SOUTH CENTRAL:																	
Arkansas.....	108	60	12	.....	104	60	12	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana.....	225	141	124	22	224	139	123	1	2	1	59.6	13.7	.....	61.2	13.0	.....	.....
Oklahoma.....	267	140	57	.....	267	139	57	.....	1	.....	90.7	.....	.....	92.1	.....	.....	.....
Texas.....	741	435	123	14	613	383	96	128	52	27	70.3	253.6	.....	60.1	.....	.....	.....
MOUNTAIN:																	
Montana.....	170	66	26	6	167	41	20	3	25	6	.....	.....	.....	.....	.....	.....	.....
Idaho.....	92	43	16	.....	92	39	13	.....	4	3	.....	.....	.....	.....	.....	.....	.....
Wyoming.....	35	10	6	.....	35	10	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah.....	287	191	96	.....	287	191	51	.....	.....	45	50.3	.....	.....	50.3	.....	.....	.....
Colorado.....	563	508	180	24	563	508	180	.....	.....	.....	10.8	182.2	.....	10.8	182.2	.....	.....
New Mexico.....	29	18	4	1	28	18	4	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Arizona.....	79	13	7	.....	78	13	6	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Nevada.....	21	13	6	.....	17	12	4	.....	1	2	.....	.....	.....	.....	.....	.....	.....
PACIFIC:																	
Washington.....	1,116	1,063	634	51	1,090	1,029	418	26	34	216	5.0	67.7	.....	5.9	146.2	.....	-84.3
Oregon.....	637	605	153	19	534	509	153	103	96	.....	5.3	295.4	.....	4.9	232.7	.....	.....
California.....	3,874	2,937	1,237	285	3,755	2,366	916	119	571	321	31.9	137.4	334.0	58.7	158.3	-79.2	77.9

¹ A minus sign (-) denotes decrease; percentages are omitted where base is less than 100.

CHAPTER V.—FINANCIAL STATISTICS.

Character of the statistics.—Detailed statistics concerning the financial transactions of telephone companies for the census of 1917 were confined to the systems having annual incomes of \$5,000 or more. Systems having incomes of less than \$5,000 a year reported only three financial items to the census, the gross receipts (or, in the case of mutual companies, the total assessments) for the year, the wages paid during the year, and the total investment in telephone property. The financial data secured from the systems having annual incomes of \$5,000 or more were twofold in nature; an income statement showing in detail the revenue and expenditures for the year, and a balance sheet showing the financial condition at the end of the year. The amounts paid as salaries and wages to the various classes of employees were also reported separately.

All telephone companies having annual incomes of \$10,000 have been required since January 1, 1913 to adopt the uniform accounting system prescribed by the Interstate Commerce Commission. This system is the basis for annual reports to the Interstate Commerce Commission, two forms of reports being required—a long form for telephone companies having annual incomes of \$50,000 or more (Class A companies and Class B companies), and a shorter form for companies having annual incomes of from \$10,000 to \$50,000 (Class C companies). In addition, a circular is mailed to Class D companies, those having annual incomes of from \$5,000 to \$10,000, but the adoption by these companies of a uniform accounting system or their submission of a detailed annual report is not required.

The schedule adopted by the Bureau of the Census for the 1917 Census of Telephones was modeled after the annual reports required by the Interstate Commerce Commission, especially as regards the financial data. The Interstate Commerce Commission account numbering was used on the census schedule, so that the reporting companies need experience no difficulty in knowing which of the more detailed accounts required by the Interstate Commerce Commission should be used in preparing their answers to the classifications indicated in the reports which were required by the Bureau of the Census. Since a single form was used by the Bureau of the Census for the reports of all companies having annual incomes of \$5,000 or more, and since the Interstate Commerce Commission does not require companies having less than \$10,000 of annual income to adopt a uniform accounting system, some companies found it rather difficult to furnish the information required by the census inquiries. As a rule, however,

the reports were prepared in a satisfactory manner, there being few cases where the exact amounts could not be obtained from the records and where, consequently, the company submitted estimated figures.

Many of the larger telephone systems operate in more than one state. This made it impossible to present separate statistics for the financial transactions in each state, only the totals for the United States being shown for the systems having annual incomes of more than \$5,000. Statistics of the gross receipts for 1917 and of the total investment on December 31, 1917, for the companies, lines, or systems having annual incomes of less than \$5,000 are shown, by states, in Table 14.

Comparison with prior censuses.—In several of the tables of this chapter no comparative figures for prior censuses can be presented. The adoption in 1913 of the uniform system of accounts promulgated by the Interstate Commerce Commission as the basis for the inquiries of the Bureau of the Census renders impossible any detailed comparison of the 1917 statistics with those of prior censuses. Furthermore, even in the comparatively few items for which a valid comparison with prior censuses can be made these comparative figures can be presented only for the censuses of 1912 and 1907, since the statistics for 1902 include many reports from systems having annual incomes of less than \$5,000.

Table 3 presents the general totals of income, expenses and capitalization, for those systems having annual incomes of \$5,000 or more at the censuses of 1917, 1912, and 1907. The figures for revenue and expenses for 1912 and 1907 in Table 3 are not the same as those published in the report for 1912. This is due to the subtraction both from income and expenses of "payments for telephone traffic made to other companies." The "telephone operating revenue" in 1917 included only revenue derived from messages transmitted wholly over the reporting company's lines, and the reporting company's proportion of tolls for messages transmitted by the joint use of its own and other lines. The amounts deducted from the total income and expense to eliminate "payments for telephone traffic made to other companies" were \$1,187,265 in 1912 and \$949,962 in 1907. With this revision, the totals of revenue and expenses shown for each of the last three census years are thought to be strictly comparable. The statistics in Table 3 show that while the revenue of telephone companies has more than doubled during the decade 1907–1917, the expenses have increased at an even more rapid rate. Much of the increase in expenses was due to the increase in salaries and wages

paid. Salaries and wages constituted 47.4 per cent of the total expense in 1912, but had advanced to 54.2 per cent of the total expense in 1917.

Table 28 presents the capitalization statistics for all telephone systems reporting annual incomes of \$5,000 or more, distinguishing the Bell System and all other systems for 1917, 1912, and 1907.

Table 28	Census year.	SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—ANALYSIS OF CAPITALIZATION.		
		Total.	Bell Telephone System.	All other systems.
Capital stock, funded debt, and real-estate mortgages of incorporated companies.	1917	\$1,785,337,790	\$1,536,030,254	\$249,307,536
	1912	1,451,438,242	1,174,605,286	276,832,956
	1907	998,066,677	750,181,335	247,885,342
Cash investment and real-estate mortgages of unincorporated companies. ¹	1917	5,376,171	.....	5,376,171
	1912	3,413,493	.....	3,413,493
	1907	2,583,833	.....	2,583,833
Total capitalization....	1917	1,790,713,961	1,536,030,254	254,683,707
	1912	1,454,851,735	1,174,605,286	280,246,449
	1907	1,000,650,510	750,181,335	250,469,175
Deduct intercompany holdings.	1917	639,673,186	² 633,670,438	6,002,748
	1912	501,476,067	² 492,181,436	9,294,631
	1907	274,231,121	258,189,989	16,041,132
Net capitalization.....	1917	1,151,040,775	902,359,816	248,680,959
	1912	953,375,668	682,423,850	270,951,818
	1907	726,419,389	491,991,346	234,428,043
Deduct value of investments outside of telephone industry of the United States.	1917	73,878,464	70,590,587	3,287,877
	1912	62,090,435	61,194,984	895,451
	1907	25,255,951	25,090,795	165,156
Net capitalization invested in telephone industry of the United States.	1917	1,077,162,311	831,769,229	245,393,082
	1912	891,285,233	621,228,866	270,056,367
	1907	701,163,438	466,900,551	234,262,887

¹ Includes mortgage indebtedness of unincorporated telephone systems to the amount of \$429,572 in 1917, and \$126,355 in 1912.

² Includes \$616,263,920 of intercompany holdings within the Bell System, and \$17,406,518 of stocks and bonds of other telephone companies in 1917, and \$480,747,250 of intercompany holdings within the Bell System, and \$11,434,186 of stocks and bonds of other telephone companies in 1912.

The "capital stock, funded debt, and real-estate mortgages of incorporated companies" is the gross amount of capitalization; this includes the intercompany holdings of the Bell System and of the non-Bell systems in other telephone companies and presents the capitalization of incorporated companies. The second item, "cash investment and real-estate mortgages of unincorporated companies" represents what may be called the "capitalization" of those systems owned by individuals, partnerships, associations, or otherwise, which have never gone through the form of securing a certificate of incorporation.

The capital stock and funded debt, as shown in Table 3, is exclusive of the \$616,263,920 in 1917, \$480,747,250 in 1912, and \$258,189,989 in 1907 of intercompany holdings within the Bell System. The statistics of "capital stock, funded debt, and real-estate mortgages of incorporated companies," shown as the first item of Table 28, include these intercompany holdings.

The real-estate mortgages are in their essential characteristics very little different from funded debt. This was recognized by the Interstate Commerce Commission in the uniform system of accounts which it

prescribed for telephone companies, in which "all bonds, notes, and other evidences of indebtedness (except open accounts for advances) which, by the terms of the creation of the debt, do not mature until more than one year after the date of such creation" are classed as funded debt. The census schedule for 1917, following the practice of the Interstate Commerce Commission in this respect, grouped funded debt and real-estate mortgages together. At prior censuses mortgages were reported as a separate item. A retabulation of the 1912 reports showed that of the total of \$1,258,647 of real-estate mortgages, \$126,355 was reported by unincorporated systems and \$1,132,292 by incorporated systems. In the present report the latter amount was classed with funded debt, making the total for long-term interest-bearing capital comparable for the last two censuses. Such a retabulation for 1907 was not possible, since the original tabulation sheets and schedules have been destroyed. Therefore, all of the real-estate mortgages reported at that census (\$1,188,481) were grouped with funded debt, and to this extent the statistics shown for this item in Table 3 for 1907 are larger than they properly should be. This lack of comparability is in reality of small moment, however, as the total amount of real-estate mortgages of unincorporated companies thus included with funded debt probably amounted to not more than \$100,000. Both the capital stock and funded debt as reported in 1907 and 1912 included the amount of such securities held in the treasury, the issue of which was authorized by the stockholders and directors but which were not yet outstanding in the hands of the public. The uniform system of accounts prescribed by the Interstate Commerce Commission specifically provides that such securities shall be deducted by the companies from the balance sheet which they have submitted each year. The companies also made this deduction in the reports which they submitted to the Bureau of the Census in 1917. In order, therefore, to present comparable statistics for the last three censuses these treasury securities, which amounted to \$21,735,415 in 1912 and \$19,434,007 in 1907, are excluded from figures for capital for these years as presented in the present report.

To ascertain the net capital, the intercompany holdings of the Bell System in its own subsidiaries as well as in other telephone companies and the investments of non-Bell companies in the stocks and bonds of other telephone companies have been deducted. If these amounts were allowed to remain in the statistics of capitalization, a duplication would exist to this extent. The statistics of net capital as presented in Table 28, however, are actually correct only in the total. The Bell System in 1917 owned stocks and bonds of other telephone systems to the amount of

\$17,406,518. This amount has been deducted from the net capital of the Bell System (\$902,359,816) as shown in this table, although a greater amount than the net capital of the Bell System in 1917, as shown in Table 28, was actually outstanding in the hands of the public. (See Table 21.) The converse is true of the intercompany holdings deducted from the total capital of the non-Bell companies to show their net capital. The actual capital of these companies outstanding in the hands of the public is less than the net capital shown in the table, by the amount of the securities of "independent" telephone companies owned by the Bell System. The total column, however, represents the actual capitalization outstanding in the hands of the public.

In addition to the telephone securities reported, a number of companies reported interests in stocks and bonds of concerns other than telephone companies, and many other investments of a permanent nature outside the telephone industry. The amount of such investments must be deducted from the gross capital to ascertain the "net capital chargeable directly to the telephone industry."

It is noticeable that in 1917 the intercompany holdings represented more than one-third of the total stock and bonds issued. The bulk of such holdings was reported by the Bell System. The amount of intercompany holdings of this one system was more than two-fifths of its gross capitalization in 1917, and 1912, and one-third in 1907. A very small per cent of the gross capitalization of all other systems was invested in the stocks and bonds of other telephone companies.

Although it is possible to calculate the net capitalization based on the telephone business of the United States, it is not possible to distribute that net capitalization precisely among the different classes of securities. The total amount of intercompany holdings is available, but not the amount distributed according to classes of securities. Furthermore, while the investments of telephone companies in stocks or properties outside of the telephone business of the United States may properly be deducted from the total capitalization in order to ascertain the capitalization based on the telephone business of the United States, the amount of this deduction can not, of course, be taken out of any one class of securities, and although it would be possible to apportion this deduction among the classes of securities pro rata, the results would have little significance. Consequently,

no statistics are presented in which a segregation is made of the net capitalization into capital stock and funded debt.

Dividends and interest payments.—It is obvious that in considering the relation between dividends and interest payments and capitalization, it is necessary to show the entire amount of capitalization in the hands of the public and the entire amount of dividends or interest paid thereon, regardless of the question whether such capitalization represents the telephone business only or includes investments in other industries, or whether the dividends or interest are derived wholly from income from the telephone business or include revenue from other sources. The interest payments reported for 1912 include the amounts paid on notes, loans, and mortgages as well as on the funded debt. It is necessary, therefore, to combine these classes of securities and compare the interest payments with the total. Such a comparison is made in the following statement for 1917, 1912, and 1907. Comparable figures are not available for 1902.

	1917	1912	1907
Amount of funded and floating debt and mortgages ¹	\$526,372,755	\$456,900,126	\$352,785,364
Annual interest payment.....	\$26,868,861	\$20,163,960	\$15,935,395
Average rate of interest.....	5.10	4.41	4.52

¹ At end of year.

Since the amount of interest-bearing indebtedness shown in this statement is the amount in existence at the end of the year, while the amount of interest payments shown is for the entire year, it is obvious that the computation of the average rate of interest might easily lead to erroneous conclusions. Short-term obligations may be incurred and discharged during the year without affecting the balance sheet, although the transaction leaves its record in the income statement. War conditions, undoubtedly, affected the rate of interest during 1917. It is impossible, however, to determine to what extent the rather large increase in the average rate of interest for 1917 as compared with that shown for 1912 is due to an actual raise in the rate and to what extent it may be more apparent than real due to the discharge of a considerable amount of short-term obligations prior to the end of the year.

Table 29 shows, for 1917 and 1912 for incorporated companies having annual incomes of \$5,000 or more, the data regarding capital stock and dividends.

Table 29

INCORPORATED SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—STOCK AND DIVIDENDS.

	Total.		Bell Telephone System.		All other systems.	
	1917	1912	1917	1912	1917	1912
Common stock:						
Number of companies reporting.....	1,896	1,708	145	176	1,751	1,532
Dividend paying.....	997	808	64	71	933	737
Nondividend paying.....	899	900	81	105	818	795
Net amount outstanding.....	\$622,433,912	\$541,681,477	\$497,246,964	\$384,308,933	\$125,186,948	\$157,372,544
Dividend paying.....	\$545,014,895	\$426,453,971	\$490,412,135	\$372,595,815	\$54,602,760	\$53,858,156
Nondividend paying.....	\$77,419,017	\$115,227,506	\$6,834,829	\$11,713,118	\$70,584,188	\$103,514,388
Dividends—						
Net amount.....	\$40,256,813	\$32,255,125	\$36,292,569	\$28,905,001	\$3,964,244	\$3,350,124
Average rate per cent on dividend-paying stock.....	7.38	7.56	7.40	7.76	7.26	6.22
Average rate per cent on net amount of stock outstanding.....	6.47	5.95	7.30	7.52	3.17	2.13
Preferred stock:						
Number of companies reporting.....	210	231	19	37	191	194
Dividend paying.....	152	161	12	21	140	140
Nondividend paying.....	58	70	7	16	51	54
Net amount outstanding.....	\$43,510,559	\$45,082,402	\$12,162,091	\$13,576,500	\$31,348,468	\$31,505,902
Dividend paying.....	\$33,087,308	\$34,751,619	\$11,801,805	\$13,440,150	\$21,285,503	\$21,311,469
Nondividend paying.....	\$10,423,251	\$10,330,783	\$360,286	\$136,350	\$10,062,965	\$10,194,433
Dividends—						
Net amount.....	\$2,009,776	\$1,865,684	\$728,240	\$804,840	\$1,281,536	\$1,060,844
Average rate per cent on dividend-paying stock.....	6.07	5.37	6.17	5.99	6.02	4.98
Average rate per cent on net amount of stock outstanding.....	4.62	4.14	5.99	5.93	4.10	3.37

The figures for total dividends represent for the Bell Telephone System the gross payments less duplications due to intercompany payments but without any deductions of income derived from outside sources. Table 29 shows the two classes of stock and of dividend payments, but for reasons already mentioned it is impossible, in the case of the non-Bell companies, to exclude duplications due to intercompany holdings or payments from the figures for the several classes of securities and payments.

A notable feature of the telephone industry is that a large number of the small systems pay no dividends and have no outstanding funded debt upon which interest is paid. In Table 29 companies paying dividends are distinguished from those which do not. In this table it is impossible to exclude duplications due to intercompany holdings in the case of non-Bell companies, but such duplications are excluded for the Bell companies.

This table shows that inability to pay dividends as well as in the rate of dividends paid, measured according to the rate paid either on dividend-paying stock or on the net amount of all outstanding stock, the non-Bell telephone systems were in a much more favorable situation in 1917 than in 1912. This improvement is more manifest in the case of the common stock than in the case of the preferred stock. The Bell System shows a slight decrease in the average rate of dividends on its common stock; though the amount of its nondividend-paying common stock decreased and the amount of dividends paid increased.

Income and expenses.—Table 30 presents, for 1917, the income statement of telephone systems and lines reporting annual incomes of \$5,000 or more, and distinguishes the Bell System and all other systems.

Table 30

SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—INCOME STATEMENT: 1917.

ACCOUNT.	Total.		
	Total.	Bell Telephone System. ¹	All other systems.
<i>1. Operating income.</i>			
Telephone operating revenue.....	\$363,831,921	\$303,863,847	\$59,968,074
Telephone operating expense.....	253,429,704	211,074,788	42,354,916
Net telephone operating revenue.....	110,402,217	92,789,059	17,613,158
Net revenue from other operations.....	13,401	193	13,208
Total net operating revenue.....	110,415,618	92,789,252	17,626,366
Uncollectible operating revenue.....	1,648,597	1,284,869	363,728
Taxes.....	24,149,087	21,154,052	2,995,035
Deductions from net operating revenue.....	25,797,684	22,438,921	3,358,763
Operating income.....	84,617,934	70,350,331	14,267,603
<i>2. Nonoperating income.</i>			
Rent revenues.....	805,286	676,710	128,576
Dividends from telephone company stocks.....	456,037	353,051	102,986
Dividends from other stocks.....	3,207,860	3,202,560	5,300
Interest from obligations of telephone companies.....	672,019	585,572	86,447
Interest from other sources.....	3,192,032	3,015,907	176,125
Miscellaneous nonoperating revenue.....	323,244	220,420	102,824
Total nonoperating revenues.....	8,656,478	8,054,220	602,258
Nonoperating expenses.....	892,602	832,380	60,222
Nonoperating income.....	7,763,876	7,221,840	542,036
Gross income.....	92,381,810	77,572,171	14,809,639
<i>3. Deductions from gross income.</i>			
Interest on funded debt.....	24,294,072	19,592,805	4,701,267
Other interest.....	2,574,789	1,672,841	901,948
Rent deductions.....	4,284,628	3,588,400	696,228
Miscellaneous income deductions.....	1,829,581	1,583,153	246,428
Total deductions from gross income.....	32,983,070	26,437,199	6,545,871
Net income.....	59,398,740	51,134,972	8,263,768
<i>4. Disposition of net income.</i>			
Dividends:			
On common stock.....	40,256,813	36,292,569	3,964,244
On preferred stock.....	2,009,776	728,240	1,281,536
Other appropriations of net income.....	3,004,940	2,566,140	438,800
Total appropriations of net income.....	45,271,529	39,586,949	5,684,580
Balance carried to surplus.....	14,127,211	11,548,023	2,579,188

¹ Excludes intercompany duplications within the Bell Systems.

Each company with an annual income of \$5,000 or more furnished the detailed statistics in regard to income and expenses given in Table 30. The Bell System, however, furnished a combined statement covering the operations of all its subsidiary companies as well as its long-distance service. This arrangement enabled the company to eliminate all duplication due to inter-company receipts and expenditures. The reports of the non-Bell telephone companies include small amounts of interest and dividends received by certain companies from other independent telephone companies. The combination of these receipts and expenses necessarily results in a duplication which can not be eliminated, but the amount is not sufficient to have any appreciable effect.

The adoption of the Interstate Commerce Commission's form of income statement made it impossible to present a detailed comparison of income and expenses for 1917 with prior censuses. The terminology used by the Bureau of the Census in securing the statement of income and of expenses for 1917 is that of the Interstate Commerce Commission, and each of the terms is explained fully in the Interstate Commerce Commission's instructions for preparing the reports made to it.

Table 31 presents the principal items of operating revenue and expense for telephone systems and lines having annual incomes of \$5,000 or more, distinguishing the Bell System and all other systems, and showing the per cent each forms of the total.

ACCOUNT.	Total.	Bell Telephone System.	All other systems.	Percent of total.	
				Bell.	All other.
Operating revenues.	\$363,831,921	\$303,863,847	\$59,968,074	100.0	100.0
Exchange revenues.....	262,698,775	214,119,479	48,579,296	70.5	81.0
Toll revenues.....	97,250,496	86,814,336	10,436,160	28.6	17.4
Miscellaneous revenues.....	3,681,346	2,930,032	751,314	1.0	1.3
Assessments (for mutual companies only).....	201,304	.....	201,304	.....	0.3
Operating expenses.	253,429,704	211,074,788	42,354,916	100.0	100.0
Repairs and other maintenance.....	54,746,253	42,789,342	11,956,911	20.3	28.2
Traffic expenses.....	82,201,988	70,056,681	12,145,307	33.2	28.7
Depreciation of plant and equipment.....	63,312,657	54,669,816	8,642,841	25.9	20.4
General and miscellaneous.....	53,168,806	43,558,949	9,609,857	20.6	22.7

Relation of traffic to income and expense.—Table 32 shows, for telephone systems reporting annual incomes of \$5,000 or more, the averages per telephone and per message, for the various items of income and expense.

The census statistics were not collected with a view to making exact computations concerning the income and expenses per telephone or per message. The statistics necessarily include data for all systems,

irrespective of the conditions under which these systems were operated, and the methods of book-keeping are not uniform for all companies. A considerable proportion of the companies, especially the smaller ones, had very imperfect systems of accounting, and the data reported by them were not complete.

Table 32

SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE.

	1917	1912	1907
Average number of messages per telephone ¹ per year.	2,043	1,875	2,190
Average total revenue:			
Per telephone.....	\$38.41	\$34.82	\$36.01
Per message (cents).....	1.881	1.857	1.699
Average revenue from telephone operations—			
Per telephone.....	\$37.52	\$33.25	\$34.07
Per message (cents).....	1.837	1.773	1.607
Average revenue from other sources—			
Per telephone.....	\$0.89	\$1.57	\$1.95
Per message (cents).....	0.044	0.084	0.092
Average operating expenses:			
Per telephone.....	\$26.14	\$23.36	\$23.10
Per message (cents).....	1.279	1.246	1.090
Average deductions from income (taxes, rent, fixed charges, etc.):			
Per telephone.....	\$6.06	\$4.45	\$4.51
Per message (cents).....	0.296	0.237	0.213
Average net income:			
Per telephone.....	\$6.13	\$7.01	\$8.40
Per message (cents).....	0.299	0.374	0.396
Average appropriations from net income:			
Per telephone.....	\$4.67	\$4.66	\$4.78
Per message (cents).....	0.228	0.249	0.225
Average surplus:			
Per telephone.....	\$1.46	\$2.35	\$3.62
Per message (cents).....	0.072	0.125	0.171

¹ Number of telephones used for 1917 is the average number (see Table 18); number for 1912 and 1907 is number reported on Dec. 31.

In considering the income and expenses per unit proper allowance should be made for the difference in the methods of charging for telephone service. In census statistics in which the reports for many companies are combined, adjustments due to these differences are impossible. Furthermore, the "per telephone" deductions are based on the number of telephones installed at the end of the year for 1907 and 1912, but for 1917 the average number for the year was used; this results in somewhat higher averages for 1917 than if computed on the same basis as the 1912 and 1907 figures. For all these reasons the computation of earnings and expenses per telephone and per message, given in Table 32, should be accepted only as indicating, or approximating, the actual conditions.

It is, in one sense, improper to calculate the average gross revenue per telephone—that is, to divide the total revenue of companies from all sources by the number of telephones—since the gross revenue includes revenue from outside investments having nothing to do with the telephone traffic. Inasmuch, however, as the deductions from the net income (the dividends and the surplus) are derived from the gross revenue from other sources as well as from the revenue from telephone operations, it is necessary, if any calculation of the amounts of these various items per telephone or per message is to be made, to compute

similarly per telephone or per message the total revenue from which these items are derived. Since the difference between the total revenue and the telephone operating revenue is comparatively small, this distribution does show, with approximate accuracy, what part of the amount paid by the public for the use of a telephone per year and what part of the amount paid per message are used for the different purposes indicated.

The average number of messages per telephone per year showed a considerable decrease from 1907 to 1912 and an increase from 1912 to 1917. The average per telephone for gross revenue and for revenue from telephone operations showed the same trend; the average revenue per message, however, increased during each of the five-year periods. The average for operating expenses also increased during each of these five-year periods whether measured by the telephone unit or by the message unit. While for the reasons already stated the averages in the table should not be accepted as exact, the tendencies noted are in harmony with the generally accepted understanding of actual conditions.

The income and operating expenses per unit vary greatly for different states, being, in general, high for the states containing the large cities and districts of high telephone density.

Balance sheet.—Table 33 presents the balance sheet for December 31, 1917, for telephone systems reporting annual incomes of \$5,000 or more, distinguishing the Bell System and all other systems.

The balance sheets are supposed to show the financial condition of the companies at the end of the year or other periods covered by the reports. Undoubtedly differences in methods of bookkeeping are reflected in the balance sheets, and it is probable that part of the assets recorded for some companies are of questionable value. It is seldom, however, that a company underestimates the value of its assets, and therefore the combination of the balance sheets for the different companies doubtless results in larger totals than would be obtained from a conservative valuation of the properties.

The balance sheet shown includes the duplication in assets and liabilities referred to in connection with Table 28 which can be eliminated by deducting the value of stocks and bonds of other telephone companies.

The asset and liability items presented in this table follow very closely the terminology adopted by the Interstate Commerce Commission. Any question as to just what subitems are included in any of the items of the table may be answered by reference to the Interstate Commerce Commission's "Classification of Accounts."

Table 33

SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—BALANCE SHEET, DEC. 31, 1917.

ACCOUNT.	Total.	Bell Telephone System.	All other systems.
Total assets or liabilities.....	¹ \$1,665,120,922	² \$1,331,599,048	\$333,521,874
ASSETS.			
Plant and equipment.....	1,435,912,142	1,140,639,666	295,272,476
Other property (nontelephone).....	5,441,207	4,233,495	1,207,712
Stocks of telephone companies.....	12,982,417	8,320,554	4,661,863
Funded debt of telephone companies.....	10,426,849	9,085,964	1,340,885
Miscellaneous stocks.....	53,771,468	53,442,400	329,068
Miscellaneous funded debt.....	8,454,582	8,360,397	94,185
Advances to system telephone companies.....	2,197,015	.....	2,197,015
Marketable securities.....	6,211,206	4,554,294	1,656,912
Notes receivable.....	2,949,293	1,904,274	1,045,019
Accounts receivable.....	36,017,547	28,540,250	7,477,297
Cash and deposits.....	43,059,392	36,913,608	6,145,784
Materials and supplies.....	23,954,088	18,355,160	5,598,928
Sinking and other special funds.....	2,494,001	951,248	1,542,753
Sundries.....	21,249,715	16,297,738	4,951,977
LIABILITIES.			
Common stock.....	622,433,912	497,246,964	125,186,948
Preferred stock.....	43,510,559	12,162,091	31,348,468
Cash investment (of unincorporated lines).....	4,946,599	.....	4,946,599
Funded debt (including real-estate mortgages).....	503,558,971	410,357,279	93,201,692
Advances from system corporations.....	5,369,981	.....	5,369,981
Notes payable.....	17,443,803	5,000,370	12,443,433
Accounts payable.....	23,574,640	16,802,907	6,771,733
Reserves for depreciation.....	231,378,582	206,862,884	27,515,698
Other reserves.....	10,926,942	10,177,909	749,033
Sundries.....	50,016,785	44,917,747	5,099,038
Surplus.....	¹ 148,960,148	128,070,897	¹ 20,889,251

¹ Exclusive of \$4,757,783 deficit reported by the companies showing a deficit.

² Excludes intercompany duplications within the Bell System.

Incorporated and unincorporated companies.—Separate statistics are presented in Table 34 for the "all other" (non-Bell) incorporated and unincorporated systems.

Table 34

NON-BELL SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—BALANCE SHEET, DEC. 31, 1917.

ACCOUNT.	Total.	Incorporated.	Unincorporated.
Total assets or liabilities.....	¹ \$333,521,874	¹ \$326,039,485	¹ \$7,482,389
ASSETS.			
Plant and equipment.....	295,272,476	283,448,158	6,824,318
Other property (nontelephone).....	1,207,712	1,197,810	9,902
Stocks of telephone companies.....	4,661,863	4,661,419	444
Funded debt of telephone companies.....	1,310,885	1,340,720	165
Miscellaneous stocks.....	329,068	316,529	12,539
Miscellaneous funded debt.....	94,185	94,185	.....
Advances to system telephone companies.....	2,197,015	2,197,015	.....
Marketable securities.....	1,656,912	1,631,683	25,229
Notes receivable.....	1,045,019	1,019,460	25,559
Accounts receivable.....	7,477,297	7,212,018	265,279
Cash and deposits.....	6,145,784	5,961,809	183,975
Material and supplies.....	5,598,928	5,485,420	113,508
Sinking and other special funds.....	1,542,753	1,535,276	7,477
Sundries.....	4,951,977	4,937,983	13,994
LIABILITIES.			
Common stock.....	125,186,948	125,186,948	.....
Preferred stock.....	31,348,468	31,348,468	.....
Cash investment (of unincorporated lines).....	4,946,599	.....	4,946,599
Funded debt (including real-estate mortgages).....	93,201,692	92,772,120	429,572
Advances from system corporations.....	5,369,981	5,369,981	.....
Notes payable.....	12,443,433	11,792,068	651,365
Accounts payable.....	6,771,733	6,698,277	73,456
Reserves for depreciation.....	27,515,698	27,160,170	355,528
Other reserves.....	749,033	731,897	17,136
Sundries.....	5,099,038	5,067,447	31,591
Surplus.....	¹ 20,889,251	¹ 19,912,109	¹ 977,142

¹ Exclusive of deficit reported by companies having a deficit to the amount of \$4,757,783; of this amount, \$4,710,591 was reported by incorporated and \$47,192 by unincorporated systems.

EMPLOYEES, SALARIES, AND WAGES.

All telephone companies and systems having annual incomes of \$5,000 or more were required to report the numbers of the several classes of employees which were on their rolls on September 29, 1917, together with the amount of salaries and wages paid each class during the year. If the data for September 29 were not available, they were required to report the number for the nearest representative date. All regular

officers and employees, whether engaged in operation, maintenance, canvassing, or collecting, or otherwise employed, were included. If any persons were employed only a portion of the time in the telephone service, the report was to include only the wages paid in connection with that service.

Table 35 shows, for telephone systems reporting annual incomes of \$5,000 or more, the number of employees, classified according to work performed with salaries and wages paid, for 1917, 1912, and 1907.

Table 35

	SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—EMPLOYEES, SALARIES, AND WAGES.					
	1917	1912	1907	Per cent of increase. ¹		
				1907-1917	1912-1917	1907-1912
Employees, total: ²						
Number.....	244,490	183,361	131,670	85.7	33.3	39.3
Salaries and wages.....	\$169,655,066	\$96,040,541	\$65,009,349	161.0	76.6	47.7
Salaried employees:						
Number.....	44,705	38,753	22,819	95.9	15.4	69.8
Salaries.....	\$46,566,869	\$32,681,482	\$18,542,619	151.1	42.5	76.2
Salaried officers—						
Number.....	4,118	1,753	(³)		134.9	
Salaries.....	\$9,213,516	\$3,086,242	(³)		198.5	
Superintendents and managers—						
Number.....	6,406	5,673	(³)		12.9	
Salaries.....	\$7,355,268	\$7,391,975	(³)		—0.5	
Clerks, stenographers, and other salaried employees—						
Number.....	34,181	31,327	(³)		9.1	
Salaries.....	\$29,995,085	\$22,203,265	(³)		35.1	
Wage earners:						
Number.....	199,785	144,608	108,851	83.5	38.2	32.8
Salaries.....	\$123,088,197	\$63,359,059	\$46,466,730	164.9	94.3	36.4
Operators—						
Number.....	138,971	96,332	72,518	91.6	44.3	32.8
Male.....	1,679	1,972	2,457	—31.7	—14.9	—19.7
Female.....	137,292	94,360	70,061	96.0	45.5	34.7
Wages.....	\$66,137,070	\$32,474,093	\$22,636,671	192.2	103.7	43.5
All other employees—						
Number.....	60,814	48,276	36,333	67.4	26.0	32.9
Wages.....	\$56,951,127	\$30,884,966	\$23,830,059	139.0	84.4	29.6

¹ A minus sign (—) denotes decrease.

² In addition, systems reporting annual incomes of less than \$5,000 in 1917 reported 18,139 employees and paid \$6,015,383 in wages. The number of employees shown for 1917 is as of Sept. 29, the number for 1912 as of Sept. 16, and the number for 1907 is the average number.

³ Separate statistics not available.

This table presents statistics for employees, salaries, and wages only for systems reporting annual incomes of \$5,000 or more. At the census of 1917, the total number of the employees of systems reporting annual incomes of less than \$5,000, and the total amount of salaries and wages paid them was reported to the Bureau of the Census, but no attempt was made to secure a segregation of these employees into the different classes presented in Table 35. In fact, such a segregation would be practically impossible, and if it could be made would be of little value, since in these small systems and lines there is much overlapping of work, a single employee in many cases performing most, if not all, of the work for the entire system. The number of the employees of the systems reporting annual incomes of less than \$5,000 in 1917 and the wages paid them are shown, by states, in Table 14.

The number of employees shown in Table 35 for the year 1917 is as of September 29; the number for 1912 is as of September 16th; while that for 1907 is the average number reported for that year. The figures shown for 1917 for the different classes of employees furthermore

are not strictly comparable with those for 1917 and 1912 due to the different basis of classification used in 1917. This was because the regrouping of the standard classifications required by the Interstate Commerce Commission did not fit exactly the classifications shown on the census schedule for 1912 and 1907. This is particularly true in the case of salaried employees, which results in showing a relatively small increase in the number of superintendents and managers from 1912 to 1917 and a decrease in their salaries. Under the regrouping of the Interstate Commerce Commission classifications some employees classed as superintendents and managers in 1912 were thrown in with the class of "salaried officers of corporation" in 1917.

The Bureau of the Census also secured information regarding the weekly rates of pay of telephone employees. The summary of this information is presented in Table 36.

A possible element of misunderstanding in this table consists in the number of part-time employees reported. In order to properly interpret the number

of employees shown for the various classes of employees in the different wage-rate groups, it must be stated that the large number of employees appearing in the lower wage groups is due largely to the inclusion of part-time employees; for example, of the 979 male employees shown for the Bell System in the "Under \$5.00" group, 645, or 65.9 per cent, are part-time employees. Similarly, of the 4,586 female employees in this wage group, 1,843, or 40 per cent, are part-time employees.

This table also presents statistics for a considerable number of "officers and operating heads" at nominal rates of pay. In some cases, the officers and operating

heads of small telephone companies actually devote only a small portion of their time to the telephone business and receive only a small salary. In other cases, especially in the reports for the Bell Telephone System, it was found necessary in order to make the reports to the Census Bureau consistent with the reports to the Interstate Commerce Commission to class all officers serving more than one company under the distribution by wage groups in accordance with their salary as prorated between different companies. This resulted in showing a large number of officers and operating heads in the lower wage groups.

Table 36

SYSTEMS REPORTING ANNUAL INCOMES OF \$5,000 OR MORE—NUMBER OF EMPLOYEES CLASSIFIED ACCORDING TO CHARACTER OF SERVICE AND COMPENSATION PER WEEK.

COMPENSATION PER WEEK.	Total.			Officers and operating heads.		Attorneys, engineers, and accountants.		Clerical employees.		Local managers and commercial agents.		Operators and service inspectors.		Plant, construction, and maintenance men.		All other employees.	
	Total.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
All systems, total.....	244,490	85,239	159,251	4,078	130	4,185	83	11,612	18,103	6,126	388	1,697	137,274	49,195	66	8,346	3,207
Under \$5.00.....	11,025	1,794	9,231	374	11	10	3	185	183	63	9	417	8,148	216	.....	529	877
\$5.00 to \$6.99.....	27,402	1,583	25,819	170	4	8	1	684	890	52	60	274	24,493	156	26	239	345
\$7.00 to \$8.99.....	39,750	1,520	38,230	65	7	20	10	585	2,465	41	61	207	35,081	395	11	207	595
\$9.00 to \$11.99.....	56,536	5,590	50,946	123	7	91	23	936	6,431	242	136	294	43,374	3,022	19	882	956
\$12.00 to \$14.99.....	32,752	10,019	22,733	111	12	170	24	1,096	4,090	404	61	148	18,270	6,493	8	1,597	268
\$15.00 to \$23.99.....	53,985	42,178	11,807	434	57	1,237	22	5,482	3,864	3,190	49	256	7,666	27,285	1	4,294	148
\$24.00 to \$35.99.....	18,662	18,201	461	954	26	1,459	.....	2,235	173	1,771	11	81	233	11,157	1	544	17
\$36.00 and over.....	4,378	4,354	24	1,847	6	1,190	.....	409	7	363	1	20	9	471	.....	54	1
Bell System, total.....	198,700	69,457	129,243	2,535	77	3,964	44	10,552	15,725	4,133	269	1,144	110,139	39,917	53	7,212	2,936
Under \$5.00.....	5,565	979	4,586	59	.....	1	.....	132	70	12	8	238	3,742	102	.....	435	766
\$5.00 to \$6.99.....	17,520	1,100	16,420	23	.....	3	.....	625	637	15	45	148	15,414	90	24	196	300
\$7.00 to \$8.99.....	30,149	1,036	29,113	14	1	18	9	530	2,028	10	37	133	26,487	194	7	137	544
\$9.00 to \$11.99.....	49,999	4,117	45,882	21	3	78	17	788	5,528	128	92	229	39,317	2,159	15	714	910
\$12.00 to \$14.99.....	29,293	7,727	21,566	15	5	152	10	903	3,694	211	48	110	17,546	5,005	5	1,331	258
\$15.00 to \$23.99.....	45,946	34,707	11,239	208	48	1,161	8	5,047	3,600	2,343	32	197	7,407	21,843	1	3,908	143
\$24.00 to \$35.99.....	16,463	16,045	418	686	17	1,394	.....	2,130	162	1,216	7	72	217	10,087	1	460	14
\$36.00 and over.....	3,765	3,746	19	1,509	3	1,157	.....	397	6	198	.....	17	9	437	.....	31	1
Independent systems, total.....	45,790	15,782	30,008	1,543	53	221	39	1,060	2,378	1,993	119	553	27,135	9,278	13	1,134	271
Under \$5.00.....	5,460	815	4,645	315	11	9	3	53	113	51	1	179	4,406	114	.....	94	111
\$5.00 to \$6.99.....	9,882	483	9,399	147	4	5	1	59	253	37	15	126	9,079	66	2	43	45
\$7.00 to \$8.99.....	9,601	484	9,117	51	6	2	1	55	437	31	24	74	8,594	201	4	70	51
\$9.00 to \$11.99.....	6,537	1,473	5,064	102	4	13	6	148	903	114	44	65	4,057	863	4	168	46
\$12.00 to \$14.99.....	3,459	2,292	1,167	96	7	18	14	193	396	193	13	38	724	1,488	3	266	10
\$15.00 to \$23.99.....	8,039	7,471	568	226	9	76	14	435	264	847	17	59	259	5,442	.....	386	5
\$24.00 to \$35.99.....	2,199	2,156	43	268	9	65	.....	105	11	555	4	9	16	1,070	.....	84	3
\$36.00 and over.....	613	608	5	338	3	33	.....	12	1	165	1	3	.....	34	.....	23	.....

APPENDIX

SCHEDULE USED IN SECURING STATISTICS FOR TELEPHONE SYSTEMS HAVING AN INCOME OF \$5,000 AND OVER IN 1917.

8-4015 a

DEPARTMENT OF COMMERCE [D15-543]
BUREAU OF THE CENSUS
 SAM. L. ROGERS, DIRECTOR

CENSUS OF TELEPHONES, 1917
 EUGENE F. HARTLEY, CHIEF STATISTICIAN

(All commercial and mutual, or rural or cooperative telephone systems, and long-distance and toll lines having an annual income of \$5,000 and over, must be reported on this schedule. All other telephone lines and systems must be reported on schedule D16-544, for those having an annual income of less than \$5,000 in 1917.)

Name of Company or System _____

State _____ City _____

General Office (give street, city, street, and number) _____

AUTHORIZATION.

The act of Congress approved June 7, 1906, authorizes the Director of the Census to collect every fifth year statistics relating to the electric industries, including telephones. The act approved July 2, 1909, directs that it shall be the duty of every owner, president, treasurer, secretary, director, or other officer or agent of any establishment or company covered by the census inquiry, to furnish the information indicated by the schedules that have been prepared in conformity with these requirements.

The last census of telephones covered the year 1912, and this schedule has been prepared for the census of 1917. The statistics should relate to the calendar year ending December 31, 1917. Except in the case of number of employees, all questions that relate to a single date, such as those regarding cash on hand, wire mileage, telephones, etc., should be of the date of the last day of the year covered by the report.

The answers to inquiries in regard to financial matters will be held absolutely confidential; the separate reports will be combined so as to show totals for all companies in each state. The information will be used only for the statistical purposes for which it is given, and will not be disclosed to any individual, state, or local authority, or other Bureau or Department of the Federal Government.

Sam. L. Rogers
 Director of the Census.

CERTIFICATE.

THIS IS TO CERTIFY that the information contained in this schedule is complete and correct to the best of my knowledge and belief, and it covers the period from _____, 19____, to _____, 19____.

(Signature and official designation of the person furnishing the information.)

 (Address of person furnishing the information.)

(Signature of Special Agent.)

Each question should be answered; if not applicable, use word "None."

- Does company do telegraph business? (Answer Yes or No) _____
- Character of organization. (State the form of organization as it existed on the last day of the year covered by the report, whether individual, firm or partnership, mutual company, cooperative association, incorporated company, or other form, if mutual or cooperative and also incorporated, give both.) _____
- If a consolidated company, give names and location of constituent companies included in this report. _____
- If a subsidiary or leased company, give name and address of operating company or lessee. _____
- Give names and addresses of farmer or rural lines connected with but not owned by the company reporting (Give only the lines for which statistics are included in this report.) _____
- Miles of wire. (The answers to this inquiry should show the total number of miles of single wire in operation, or ready for operation. If several wires are on one line of poles or in one conduit or cable, count length of each wire separately.)

	NUMBER OF MILES OF SINGLE WIRE		
	Total	Overhead	Underground
Wire on exchange circuits _____			
Wire on toll circuits _____			
TOTAL MILES OF WIRE _____			

If company operates wires in more than one state, give names of states and total miles of single wire in each state _____

- Miles of "Phantom Circuits" _____
- Number of miles of pole line operated (including that used jointly with other companies) _____
- Number of central offices and private branch exchanges. (For census purposes a "Public central office" is a place where wires are interconnected by means of a switchboard for the use of the public generally. A "Private branch exchange" is a switchboard within a business building, apartment house, hotel, etc., establishing interior communication, also outside communication by a trunk line to the public central office. The number of these private branch exchanges and their stations should be reported by the exchange company through which they operate.)

Central offices (by states) _____

Private branch exchanges (by states) _____

	NUMBER	
	Dec. 31, 1917	Dec. 31, 1916
10. Total number of telephones of all kinds in use or wired for use. (By one telephone is meant the set of two instruments—transmitter and receiver. Include all telephones—those of regular exchange subscribers, those of private branch exchanges, those of toll pay and toll pay-out lines, toll stations and farmer, rural, or party lines owned by the company, and those used by the company for communication between its own departments. Do not include telephones on wires of other companies or lines.)		

If company operates telephones in more than one state, give names of states and total number of stations or telephones in each state _____

- Estimated total number of telephone connections or calls, including both completed and uncompleted, during the year originating from telephones owned and operated by the company reporting (do not include interior private branch calls).

	TOTAL NUMBER	NUMBER FOR EACH STATE		
		Name of state	Name of state	Name of state
Exchange connections or calls _____				
Long-distance and toll connections or calls _____				
TOTAL NUMBER OF CONNECTIONS OR CALLS _____				

(1-543)

Each question should be answered; if not applicable, use word "None."

FINANCIAL STATISTICS.

12. INCOME STATEMENT. Operating Revenues and Expenses

Material numbers on schedules are those of the primary accounts prescribed by the Interstate Commerce Commission as fully defined in I. C. C. Manual "Uniform System of Accounts for Telephone Companies," in accordance with which, pursuant to law, the accounts of all companies having annual revenues exceeding \$10,000 are now compiled.

Companies are requested to report amounts derived in respective accounts pursuant to I. C. C. Manual of Instructions, subject only to such minor variations as may be necessary for census purposes as are here indicated.

Companies having annual revenues from \$10,000 to \$100,000, although not required to report to the Interstate Commerce Commission, should answer such of the inquiries as are applicable.

Note.—Arbitrational deductions to maintain below indicated limits which have no I. C. C. number, the company may list them or leave to the Bureau, at option.

12a. INCOME STATEMENT.

I. C. C. Class A-B	Item	Amount applicable to year ending Dec. 31, 1917	I. C. C. Class A-B	Item	Amount applicable to year ending Dec. 31, 1917
100-1	Telephone operating revenue		100-2	Telephone operating expense	
100-3	Net telephone operating revenue		100-4	Net revenue from other operations	
100-5	Net revenue from other operations		100-6	TOTAL NET OPERATING REVENUES	
100-7	Uncollectible operating revenue		100-8	Taxes	
100-9	Taxes		100-9	Net revenue attributable to operations	
100-10	Net revenue attributable to operations		100-10	Net revenue from other operations	
100-11	Net revenue from other operations		100-11	Net revenue from other operations	
100-12	Net revenue from other operations		100-12	Net revenue from other operations	
100-13	Net revenue from other operations		100-13	Net revenue from other operations	
100-14	Net revenue from other operations		100-14	Net revenue from other operations	
100-15	Net revenue from other operations		100-15	Net revenue from other operations	
100-16	Net revenue from other operations		100-16	Net revenue from other operations	
100-17	Net revenue from other operations		100-17	Net revenue from other operations	
100-18	Net revenue from other operations		100-18	Net revenue from other operations	
100-19	Net revenue from other operations		100-19	Net revenue from other operations	
100-20	Net revenue from other operations		100-20	Net revenue from other operations	
100-21	Net revenue from other operations		100-21	Net revenue from other operations	
100-22	Net revenue from other operations		100-22	Net revenue from other operations	
100-23	Net revenue from other operations		100-23	Net revenue from other operations	
100-24	Net revenue from other operations		100-24	Net revenue from other operations	
100-25	Net revenue from other operations		100-25	Net revenue from other operations	
100-26	Net revenue from other operations		100-26	Net revenue from other operations	
100-27	Net revenue from other operations		100-27	Net revenue from other operations	
100-28	Net revenue from other operations		100-28	Net revenue from other operations	
100-29	Net revenue from other operations		100-29	Net revenue from other operations	
100-30	Net revenue from other operations		100-30	Net revenue from other operations	
100-31	Net revenue from other operations		100-31	Net revenue from other operations	
100-32	Net revenue from other operations		100-32	Net revenue from other operations	
100-33	Net revenue from other operations		100-33	Net revenue from other operations	
100-34	Net revenue from other operations		100-34	Net revenue from other operations	
100-35	Net revenue from other operations		100-35	Net revenue from other operations	
100-36	Net revenue from other operations		100-36	Net revenue from other operations	
100-37	Net revenue from other operations		100-37	Net revenue from other operations	
100-38	Net revenue from other operations		100-38	Net revenue from other operations	
100-39	Net revenue from other operations		100-39	Net revenue from other operations	
100-40	Net revenue from other operations		100-40	Net revenue from other operations	
100-41	Net revenue from other operations		100-41	Net revenue from other operations	
100-42	Net revenue from other operations		100-42	Net revenue from other operations	
100-43	Net revenue from other operations		100-43	Net revenue from other operations	
100-44	Net revenue from other operations		100-44	Net revenue from other operations	
100-45	Net revenue from other operations		100-45	Net revenue from other operations	
100-46	Net revenue from other operations		100-46	Net revenue from other operations	
100-47	Net revenue from other operations		100-47	Net revenue from other operations	
100-48	Net revenue from other operations		100-48	Net revenue from other operations	
100-49	Net revenue from other operations		100-49	Net revenue from other operations	
100-50	Net revenue from other operations		100-50	Net revenue from other operations	
100-51	Net revenue from other operations		100-51	Net revenue from other operations	
100-52	Net revenue from other operations		100-52	Net revenue from other operations	
100-53	Net revenue from other operations		100-53	Net revenue from other operations	
100-54	Net revenue from other operations		100-54	Net revenue from other operations	
100-55	Net revenue from other operations		100-55	Net revenue from other operations	
100-56	Net revenue from other operations		100-56	Net revenue from other operations	
100-57	Net revenue from other operations		100-57	Net revenue from other operations	
100-58	Net revenue from other operations		100-58	Net revenue from other operations	
100-59	Net revenue from other operations		100-59	Net revenue from other operations	
100-60	Net revenue from other operations		100-60	Net revenue from other operations	
100-61	Net revenue from other operations		100-61	Net revenue from other operations	
100-62	Net revenue from other operations		100-62	Net revenue from other operations	
100-63	Net revenue from other operations		100-63	Net revenue from other operations	
100-64	Net revenue from other operations		100-64	Net revenue from other operations	
100-65	Net revenue from other operations		100-65	Net revenue from other operations	
100-66	Net revenue from other operations		100-66	Net revenue from other operations	
100-67	Net revenue from other operations		100-67	Net revenue from other operations	
100-68	Net revenue from other operations		100-68	Net revenue from other operations	
100-69	Net revenue from other operations		100-69	Net revenue from other operations	
100-70	Net revenue from other operations		100-70	Net revenue from other operations	
100-71	Net revenue from other operations		100-71	Net revenue from other operations	
100-72	Net revenue from other operations		100-72	Net revenue from other operations	
100-73	Net revenue from other operations		100-73	Net revenue from other operations	
100-74	Net revenue from other operations		100-74	Net revenue from other operations	
100-75	Net revenue from other operations		100-75	Net revenue from other operations	
100-76	Net revenue from other operations		100-76	Net revenue from other operations	
100-77	Net revenue from other operations		100-77	Net revenue from other operations	
100-78	Net revenue from other operations		100-78	Net revenue from other operations	
100-79	Net revenue from other operations		100-79	Net revenue from other operations	
100-80	Net revenue from other operations		100-80	Net revenue from other operations	
100-81	Net revenue from other operations		100-81	Net revenue from other operations	
100-82	Net revenue from other operations		100-82	Net revenue from other operations	
100-83	Net revenue from other operations		100-83	Net revenue from other operations	
100-84	Net revenue from other operations		100-84	Net revenue from other operations	
100-85	Net revenue from other operations		100-85	Net revenue from other operations	
100-86	Net revenue from other operations		100-86	Net revenue from other operations	
100-87	Net revenue from other operations		100-87	Net revenue from other operations	
100-88	Net revenue from other operations		100-88	Net revenue from other operations	
100-89	Net revenue from other operations		100-89	Net revenue from other operations	
100-90	Net revenue from other operations		100-90	Net revenue from other operations	
100-91	Net revenue from other operations		100-91	Net revenue from other operations	
100-92	Net revenue from other operations		100-92	Net revenue from other operations	
100-93	Net revenue from other operations		100-93	Net revenue from other operations	
100-94	Net revenue from other operations		100-94	Net revenue from other operations	
100-95	Net revenue from other operations		100-95	Net revenue from other operations	
100-96	Net revenue from other operations		100-96	Net revenue from other operations	
100-97	Net revenue from other operations		100-97	Net revenue from other operations	
100-98	Net revenue from other operations		100-98	Net revenue from other operations	
100-99	Net revenue from other operations		100-99	Net revenue from other operations	
100-100	Net revenue from other operations		100-100	Net revenue from other operations	

12b. OPERATING REVENUES

I. C. C. Class A-B	Item	Amount applicable to year ending Dec. 31, 1917	I. C. C. Class A-B	Item	Amount applicable to year ending Dec. 31, 1917
100-1	Telephone operating revenue		100-1	Telephone operating revenue	
100-2	Telephone operating expense		100-2	Telephone operating expense	
100-3	Net telephone operating revenue		100-3	Net telephone operating revenue	
100-4	Net revenue from other operations		100-4	Net revenue from other operations	
100-5	Net revenue from other operations		100-5	Net revenue from other operations	
100-6	Net revenue from other operations		100-6	Net revenue from other operations	
100-7	Net revenue from other operations		100-7	Net revenue from other operations	
100-8	Net revenue from other operations		100-8	Net revenue from other operations	
100-9	Net revenue from other operations		100-9	Net revenue from other operations	
100-10	Net revenue from other operations		100-10	Net revenue from other operations	
100-11	Net revenue from other operations		100-11	Net revenue from other operations	
100-12	Net revenue from other operations		100-12	Net revenue from other operations	
100-13	Net revenue from other operations		100-13	Net revenue from other operations	
100-14	Net revenue from other operations		100-14	Net revenue from other operations	
100-15	Net revenue from other operations		100-15	Net revenue from other operations	
100-16	Net revenue from other operations		100-16	Net revenue from other operations	
100-17	Net revenue from other operations		100-17	Net revenue from other operations	
100-18	Net revenue from other operations		100-18	Net revenue from other operations	
100-19	Net revenue from other operations		100-19	Net revenue from other operations	
100-20	Net revenue from other operations		100-20	Net revenue from other operations	
100-21	Net revenue from other operations		100-21	Net revenue from other operations	
100-22	Net revenue from other operations		100-22	Net revenue from other operations	
100-23	Net revenue from other operations		100-23	Net revenue from other operations	
100-24	Net revenue from other operations		100-24	Net revenue from other operations	
100-25	Net revenue from other operations		100-25	Net revenue from other operations	
100-26	Net revenue from other operations		100-26	Net revenue from other operations	
100-27	Net revenue from other operations		100-27	Net revenue from other operations	
100-28	Net revenue from other operations		100-28	Net revenue from other operations	
100-29	Net revenue from other operations		100-29	Net revenue from other operations	
100-30	Net revenue from other operations		100-30	Net revenue from other operations	
100-31	Net revenue from other operations		100-31	Net revenue from other operations	
100-32	Net revenue from other operations		100-32	Net revenue from other operations	
100-33	Net revenue from other operations		100-33	Net revenue from other operations	
100-34	Net revenue from other operations		100-34	Net revenue from other operations	
100-35	Net revenue from other operations		100-35	Net revenue from other operations	
100-36	Net revenue from other operations		100-36	Net revenue from other operations	
100-37	Net revenue from other operations		100-37	Net revenue from other operations	
100-38	Net revenue from other operations		100-38	Net revenue from other operations	
100-39	Net revenue from other operations		100-39	Net revenue from other operations	
100-40	Net revenue from other operations		100-40	Net revenue from other operations	
100-41	Net revenue from other operations		100-41	Net revenue from other operations	
100-42	Net revenue from other operations		100-42	Net revenue from other operations	
100-43	Net revenue from other operations		100-43	Net revenue from other operations	
100-44	Net revenue from other operations		100-44	Net revenue from other operations	
100-45	Net revenue from other operations		100-45	Net revenue from other operations	
100-46	Net revenue from other operations		100-46	Net revenue from other operations	
100-47	Net revenue from other operations		100-47	Net revenue from other operations	
100-48	Net revenue from other operations		100-48	Net revenue from other operations	
100-49	Net revenue from other operations		100-49	Net revenue from other operations	
100-50	Net revenue from other operations		100-50	Net revenue from other operations	
100-51	Net revenue from other operations		100-51	Net revenue from other operations	
100-52	Net revenue from other operations		100-52	Net revenue from other operations	
100-53	Net revenue from other operations		100-53	Net revenue from other operations	
100-54	Net revenue from other operations		100-54	Net revenue from other operations	
100-55	Net revenue from other operations		100-55	Net revenue from other operations	
100-56	Net revenue from other operations		100-56	Net revenue from other operations	
100-57	Net revenue from other operations		100-57	Net revenue from other operations	
100-58	Net revenue from other operations		100-58	Net revenue from other operations	
100-59	Net revenue from other operations				

SCHEDULE USED IN SECURING STATISTICS FOR TELEPHONE SYSTEMS HAVING AN INCOME OF LESS THAN \$5,000 IN 1917.

9-4013a

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

(D 16-544)

CENSUS OF TELEPHONES, 1917

SMALL LINES AND SYSTEMS
(Those whose income was less than \$5,000 in 1917)
EUGENE F. HARTLEY, CHIEF STATISTICIAN

DEAR SIR:

In compliance with the act of Congress approved June 7, 1906, a census of telephones is taken every fifth year. The Bureau of the Census is now taking the census of 1917. Please answer the following questions and return this report at once in the inclosed envelope, which requires no postage. If it appears from your reply that the line or system had an income of \$5,000 or over, another form requiring further statistics will be furnished.

A separate report is desired for each separately owned line or system.

SAM. L. ROGERS,
Director of the Census.

1. Name of company, line, or system.....
2. Post-office address of business office: State..... City or town.....
3. Character of organization (whether individual, firm or partnership, incorporated company, mutual company, or cooperative association).....
4. Number of lines in operation December 31, 1917, included in this report.....
5. Number of miles of wire in your entire line or system December 31, 1917.....
6. Do you operate a central or switchboard of your own? (Yes or no)..... If not, does your line or system connect directly with any other central or switchboard? (Yes or no)..... If "yes," who owns it and where is it located?.....
7. Number of telephones on your line or system December 31, 1917.....
8. Estimated number of outgoing calls per telephone per day.....
9. Total gross receipts (not including assessments of mutual companies) from operation of line or system during 1917... \$.....
10. Total amount of assessments levied by mutual companies for operation and maintenance of line or system during 1917... \$.....
11. Number of regular employees in 1917 (exclusive of those engaged exclusively on additions or extensions): Males.....
Females..... Total amount expended for their salaries and wages, \$.....
12. Total investments in lines or systems to December 31, 1917, \$.....
(This total should represent the sum of all poles, wire, telephones, switchboards, etc. If poles, etc., were contributed or set up by individual subscribers, include an estimate of the value of such material and labor.)
13. Is the line a part of another company or system?..... If so, give the name and address of such company or system.....
14. Names and addresses of farmer or rural lines or systems in your vicinity not included in this report (use back of schedule if necessary).....

11-555

(Signature, address, and official title of person furnishing the information.)

SUPPLEMENTAL INQUIRY CONCERNING WEEKLY RATES OF PAY OF EMPLOYEES.

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
SAM. L. ROGERS, DIRECTOR

CENSUS OF TELEPHONES, 1917

EUGENE F. HARTLEY, CHIEF STATISTICIAN

8-4873
(D. 17-553)

SUPPLEMENTAL INQUIRY CONCERNING WEEKLY RATES OF PAY OF EMPLOYEES

Rules governing the classification of telephone employees, in accordance with the Interstate Commerce Commission, effective as of July 1, 1917.—All companies—Class A, B, C, or smaller—shall use this condensed classification prescribed for Class C companies. In columns (e) to (t), inclusive, show the classification of employees on the basis of the normal rate of weekly compensation, exclusive of pay for overtime work and bonuses, or deductions on account of absence, etc. Joint employees should be included in that column which represents their normal rate of weekly compensation from all parties involved in the joint service arrangement. Part-time employees, i. e., those that were engaged for less than normal weekly working periods, should be separately reported in the columns representative of their actual weekly compensation, with a note indicating that they are "Part-time employees."

CLASS OF EMPLOYEES. (I. C. C. form for Class C.)	NUMBER OF EMPLOYEES IN SERVICE AS OF SEPTEMBER 29, 1917.			NUMBER OF EMPLOYEES CLASSIFIED ACCORDING TO RATE OF COMPENSATION PER WEEK, AS OF SEPTEMBER 29, 1917.															
				Under \$5.		\$5-\$6.99		\$7-\$8.99		\$9-\$11.99		\$12-\$14.99		\$15-\$23.99		\$24-\$35.99		\$36 and over.	
	Male.	Female.	Total.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t
Officers and operating heads (includes Groups 1 and 2 for Class A and B companies) ¹																			
Attorneys, engineers, and accountants (includes Groups 3, 4, 5, and 6 for Class A and B companies) ²																			
Clerical employees (consists of Group 7 for Class A and B companies) ³																			
Local managers and commercial agents (includes Groups 8 and 9 for Class A and B companies) ³																			
Operators and service inspectors (includes Groups 10, 11, and 12 for Class A and B companies) ⁴																			
Plant construction and maintenance men (includes Groups 13, 14, 15, and 16 for Class A and B companies) ⁵																			
All other employees (consists of Group 17 for Class A and B companies) ⁶																			
TOTAL.....																			

¹ This class represents "Salaried officers of corporations."

² These two classes combined represent clerks, stenographers, and salaried employees, not elsewhere included.

³ This class represents "Superintendents and managers."

⁴ This class represents "Operators."

⁵ These two classes combined represent all employees not reported in any of the above-named groups.

11-5539

INSTRUCTIONS TO SPECIAL AGENTS.

PREPARATION OF THE SCHEDULES.

Answers to inquiries to be taken from books of accounts and records.—The information secured must be accurate. In drafting the schedule every effort has been made to frame the inquiries in such a form that the answers to them can generally be taken directly from the books of accounts and records. The agent may find a disposition on the part of persons furnishing the information to give general statements or estimates, claiming that they approximate very closely the exact figures. In no case should these general statements or estimates be accepted where it is possible to secure the answers directly from the books of accounts and records. If the accounts cover two or more of the items enumerated for any of the inquiries, the total should be equitably apportioned for the reply to each subinquiry. In all cases where the answers are estimated the amounts must be preceded by the word "Estimate."

All answers must be made clearly and neatly in ink. Each question is to be answered. If any question is found not applicable and no amounts are reported, write the word "None."

Some of the inquiries require no explanation, but the following instructions, in addition to those on the schedules, should be followed by the agents in preparing all reports:

The title-page.—Page 1 must contain the name and location of the company, the address of the general office, the signature, address, and official designation of the person furnishing the information, and the signature of the special agent. *Place the office number of the report in the upper right-hand corner.* If the address of the general or business office is at a different place from that of the plant, care must be taken to give both.

The period covered, where possible, should be that of the year ending December 31, 1917. Where, however, the business year of the establishment does not correspond to the calendar year, the data may be secured for such completed business year as corresponds most nearly to the calendar year 1917. The reports for plants that were in operation only a portion of the census year will be tabulated separately; therefore it is essential to give on the title-page the *exact period* covered by each report.

TELEPHONES. (SCHEDULES D15-543 AND D16-544.)

All commercial and mutual or cooperative telephone systems that had a gross income of \$5,000 or more for the year 1917 must be reported on Schedule D15-543. All other lines and systems, including independent farmer or rural lines, must be reported on the short schedule (Schedule D16-544). The statistics for farmer or rural lines that are owned and operated by commercial companies must be included in the reports for such companies made on Schedule D15-543. (See also "Combined reports.")

Reports are not required for private, intercommunicating lines, such as railroad lines used exclusively for the dispatching and operating of trains, lines connecting different branches or departments of commercial plants, such as mines, power plants, timber camps, etc.

The American Telephone & Telegraph Co. operates exchange systems and long-distance toll lines in every State in the Union. These properties usually have a local name and are commonly known as the "Bell system." Census reports for all Bell systems will be prepared at the office of the parent company in New York and agents should not attempt to secure these reports in the field. A list showing the Bell systems in each State will be furnished each agent. The agent must secure reports for all so-called Bell systems which *do not* appear on this list.

In addition to the reports for the "Bell system," arrangements have been made with that company whereby they are to secure reports from small rural or farmer lines connecting with "Bell" exchanges. They represent lines which do not operate exchanges and are known as "Bell service lines." Agents will be furnished a list of these, showing the name, number, or other designation, and the exchange to which connected, and no attempt should be made to secure returns from such lines.

It is probable that a few telephone companies will be found that do a telegraph business. Where a telephone company does a telegraph business incidentally, one report should be made on Schedule D15-543 for the entire system, but in the case of large telegraph companies doing a telephone business incidentally, the combined report should be made on Schedule D13-541 for telegraph companies.

Where the company leases its wires for telegraph work, the fact should be ascertained and stated in a memorandum attached to the schedule. And if the company is using the same wire or wires for simultaneous telegraph and telephone work, the fact should also be noted as fully as possible.

COMMERCIAL AND MUTUAL COMPANIES. (SCHEDULE D15-543.)

Combined reports.—A separate report for each exchange of the same system in a given State is not required. If a company operates exchanges in more than one State, separate reports for each State should be secured if the system of accounts will permit. If only a few lines or a comparatively small proportion of the company's wire and stations is in another State, one report for the entire system may be prepared, showing the miles of wire, number of stations, and the number of telephone connections or calls in each State, as called for in the schedule.

When one company leases and operates another system, the report for the operating company may include the statistics for the leased system, treating it as if it were owned. In these cases the agent should be particular to see that the combined report includes the line construction, wire mileage, stations, cost of construction and equipment, and capitalization of the leased system, and that the name of the system is given in Inquiry 4. Systems which are controlled by ownership of stock, etc., and operated independently should have separate reports.

INQUIRY 5.—NAMES AND ADDRESSES OF FARMER OR RURAL LINES, ETC.

The statistics for farmer or rural lines owned by the company reporting must be included in the report, but such lines, when operated independently, must be reported on Schedule D16-544; (See instructions for "Small lines and systems.")

INQUIRY 6.—MILES OF WIRE.

The answers to this inquiry must show the total number of miles of single wire (overhead and underground) in operation or ready for operation in each State on the last day of the year covered by the report. Cables are composed of a number of pairs of wires, and the total miles of single wire must be computed and reported. If the actual length of the total single wire or of the different classes is not known, careful estimates must be secured. If wire is leased care should be taken to either include the wire and telephones in the report of the lessee (operating company) or to secure a report from the lessor company.

INQUIRY 7.—MILES OF PHANTOM CIRCUITS.

The object of this circuit is to afford additional means of service. It may be described by adding, for instance, to the two wires of the ordinary metallic "physical" circuit, proper repeating coils. Under this arrangement the two wires of each "physical" circuit serve together as one side of the "phantom" circuit, and thus three serviceable metallic telephone circuits are secured from each four telephone wires.

INQUIRY 8.—NUMBER OF MILES OF POLE LINE OPERATED.

The object of this inquiry is to obtain the total length of the construction, but not the length of the single wire, which should be reported in answer to Inquiry 6. The number of miles reported as pole line, including pole line for farmer or rural lines owned by the company, and included in the report, and that used jointly with other companies must be the actual length in miles covered by the poles on which wire is strung, whether in cables or open wire.

INQUIRY 9.—CENTRAL OFFICES AND PRIVATE BRANCH EXCHANGES.

A "public exchange" or "central" is a place where wires are interconnected by means of a switchboard for the use of the public generally. The number of these exchanges or offices by States is called for. A private branch exchange is a switchboard within a business building, apartment house, hotel, etc.—sometimes in a residence—through which wires running from one building or department or office or room to another are connected, thus establishing interior communication. Conversation with the outside world through the private branch exchange is had by connection with the public-exchange office. The number of these private exchanges must be reported by the company through which they operate.

INQUIRY 10.—NUMBER OF TELEPHONES.

The terms "stations," "boxes," and "telephones" are each intended to cover the complete instrument or telephone set of transmitter and receiver. The total number of sets or complete instruments installed must be reported as of December 31, 1916, and 1917. There should be no difficulty in ascertaining the number furnished regular exchange subscribers or the number of exchange, local pay, and outlying toll stations. The number of stations connected with private branch exchanges and those operated by the company for communication between its different offices or departments must be included.

If there is no separate record of the number of telephones on farmer or rural lines owned by the company, a careful estimate should be obtained.

It is necessary to compile statistics of the number of telephones in each State. If the company reporting operates in more than one State, give the names of the States and the number of telephones in each.

INQUIRY 11.—ESTIMATED NUMBER OF TELEPHONE CONNECTIONS OR CALLS.

In reply to this inquiry the total number of telephone connections or calls, whether completed or uncompleted, should be given, except those over private exchange wires. The total should include all long-distance and toll connections and subscribers' calls originating on telephones owned or operated by the operating company, but *not* interior private branch calls or free talks.

All calls or connections from stations within the same central office or exchange district are to be counted as connections or calls, as these do not imply any exchange of business between separate companies or separate exchange systems. Pay stations are very often used for long-distance service, but it is believed that all companies will have records bearing upon this point, enabling the separation to be made between exchange connections and the "extraterritorial" work.

A long-distance message may be defined as one between exchange systems of different companies, and a toll message as one between exchange systems of the same company, but these definitions are subject to modification, and the practice of the companies submitting reports may be accepted. In securing information for the schedule it will probably be found that a wide variation exists in the application of the terms "long-distance" and "toll message"; but the object is to separate or distinguish the long-distance and toll messages from the regular conversations within the central office or exchange district, for which no extra charge is made.

If the company operates exchanges in more than one State, give the names of States and the number of local connections or calls and the number of long-distance and toll calls in each.

INQUIRY 12.—OPERATING REVENUES AND EXPENSES.

Inquiries 12A and 12B.—This is what is known as an income account, not a cash statement, and is intended to show the earnings and expenses of the company for one year.

Since the census of 1912 the larger telephone companies have adopted the uniform system of accounts as prescribed by the Interstate Commerce Commission. The schedule for the present census has been prepared to conform as nearly as possible with the present method of bookkeeping.

Marginal numbers on the schedule are those of primary accounts prescribed by the Interstate Commerce Commission, as they are fully defined in the manual "Uniform system of accounts for telephone companies" prescribed by that commission. Agents will be given a copy of this manual, and it should be studied and used as a reference in connection with the preparation of the reports. The method prescribed for keeping the accounts of Class A and B companies—that is, those having annual operating income of more than \$50,000—is more in detail than the one applied to Class C, which have an income of \$10,000 and less than \$50,000 per annum. As the schedule for all companies having an annual income of \$5,000 or more is used by the Bureau of the Census, it will no doubt be found that companies whose annual income is between that amount and the minimum of Class C companies will not have adopted the system prescribed by the Interstate Commerce Commission for larger companies. It may be necessary, therefore, to segregate the accounts as kept by the companies to conform with the items called for under Class C on the schedule. The segregation or classification of these accounts will no doubt have to be estimated in some instances and reference should be made to pages 23 to 28 of the Interstate Commerce Commission bulletin on "Uniform system of accounts for Class C telephone companies."

12C—Operating expenses.—(See Interstate Commerce Commission numerals.)—Under "Repairs and maintenance" include all payments for the general operation and maintenance of the company, lines, and system, including supplies and materials of all kinds (wire, telephones, etc.) consumed during the year, except as indicated by other inquiries.

"Traffic expenses" should include all salaries and wages in connection with the maintenance and upkeep of the plant (as reported under Inquiry 14). "General and miscellaneous" may include office supplies and expenses, travel, advertising, commissions, rentals, insurance, legal expenses, accidents and damages, and other general expenses.

In all this income and expense showing, the statements as given by the companies will be found generally correct. If, however,

they are grossly at variance with those of similar companies in the same locality, or contain irreconcilable inconsistencies, after the agent has familiarized himself with the subject so that he can make a clear statement from his own point of view, a friendly suggestion of apparent inconsistencies will no doubt clear up the difficulties and lead to corrections, if such are necessary.

INQUIRY 13.—BALANCE SHEET.

The balance sheet has been arranged to conform to that used by the Interstate Commerce Commission, and agents must familiarize themselves with their method of reporting in accordance with the Interstate Commerce Commission numerals against the several items of the inquiry.

In cases of unincorporated companies, individuals, firms, etc., which have no liabilities of capital stock and bonds, the amount of cash invested should be entered under "Cash investment" of "Liabilities." The other items called for are self-explanatory. All these are to be given at the value carried on the books of the company at the end of the year covered by the report.

INQUIRY 14.—EMPLOYEES, SALARIES, AND WAGES.

Account for all persons employed by the company, both in the management and in the operation of the line. The number of employees who were engaged on new construction work and their salaries or wages should not be included in answer to this inquiry. The wages of such employees should show only in the amount reported for cost of construction in the "Balance sheet," Inquiry 13. Give the number of officers of corporations who receive salaries (not the number of stockholders) and the amount of their salaries for the period covered by the report. Report separately the number and salaries and wages by sex. The salaries and wages should include the allowance for board or rent furnished as part compensation.

SMALL LINES AND SYSTEMS. (SCHEDULE D16-544.)

All independent farmer or rural telephone lines that have no exchange or "central" of their own, and other lines and systems which had a gross income of less than \$5,000 for the year 1917, must be reported on the short schedule, D16-544. This, of course, includes all lines of this character that connect with exchanges of large commercial companies or systems but which are owned independently of such companies. In many cases independent farmer or rural lines are operated in connection with but not owned by commercial or mutual systems. In these cases the report for the commercial or mutual system through which they operate would include the "estimated total number of messages or talks" for the year of such lines, but not the wire mileage, telephones, etc., which should be reported separately on the short schedule.

If several farmer or rural lines jointly maintain and operate an exchange or "central," one report should be obtained for the several lines and the exchange, and the names of the lines given in a memorandum attached to the schedule.

It is intended to secure the reports for the independent farmer or rural lines and small commercial systems so far as possible by correspondence, and special agents will not be required to visit places for the exclusive purpose of securing reports for such lines, unless especially instructed to do so. Schedules, however, must be secured for all lines of this character when the information can be obtained in places that are visited in connection with one of the other branches of the electrical industries. Agents must also make inquiry concerning all of the farmer or rural lines named on their respective lists from which reports have not been received. If the necessary information for such lines can be secured by the use of the telephone, or in any other manner, without incurring the expense of a special trip, reports should be so secured and the source of the information given on the schedule. If the agent is advised that the line has gone out of existence or has been consolidated with some other line or system, he must report the facts by letter, giving the office numbers, names, and addresses of the lines or companies involved, so that the office lists can be corrected. If the agent discovers any farmer lines in addition to those on the list for which the information can not be secured at the places that are visited, he should mail a schedule, Form D16-544, to them, together with a return penalty envelope addressed to the Director of the Census, and give their names and addresses on his daily report, with the date on which the schedules were mailed. The office will then follow up the correspondence and secure the report.

The names given in answer to Inquiry 5 of Schedule D15-543 must be compared with the list, and reports secured for all systems not on the list.

In many cases the commercial company can furnish all the information required for the connecting farmer lines, and it will not be necessary to make inquiry of the owners.